

FLIGHT

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AND AIRSHIPS

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General Purpose Aircraft

CRAWWELL COLLEGE is in a position to mould the opinions of an important element among Royal Air Force officers (including most of the future officers of Air rank), and the *Journal* of the College is therefore a suitable place for the discussion of theories and suggestions bearing on the interests of the Service. It is quite right that all points of view should be set forth in this excellent publication.

In the issue of the *Journal* dated Autumn, 1934, there is a very interesting article entitled "General Purpose," the writer of which pleads for fewer types of machines in the Royal Air Force. The objects which he gives for his policy are: "(1) That as high a proportion as practicable of the aircraft in the Royal Air Force should be of a type capable of (a) concentrating at the vital point; and (b) undertaking most of the varied operations that will be required at that point. (2) That we should, as far as possible, have the benefit of the advantages of homogeneity of aircraft, such as ease of supply, maintenance, availability of spares for reinforcements, simplification of training."

Of these objects the reduction in the number of different spares required and the simplification of the training of fitters would be real advantages. To supply spares for a considerable number of different types of aircraft and engines puts a strain on the whole equipment organisation of the Service. Likewise, there is a certain risk of indifferent maintenance when fitters who have become expert on certain types have to be transferred in a hurry to units which use totally different types. If we could avoid these inconveniences without paying too high a price for the avoidance, it would be good.

For this reason the first class of so-called advantages set forth in the article do not seem to us to be very weighty. This is an age of specialisation, and all over the world designers are working to produce better and still better performance from special types. For the moment the Martin bomber mentioned by the writer of the article may seem to outstrip many special types at

their own peculiar work, and therefore to be the ideal General Purpose machine. A few years ago we in Great Britain considered that in the "Hart" we had become possessed of a very useful G.P. machine which could be adapted as day bomber, fighter, army co-operation machine, ship-plane, etc. Neither of those types, however, will hold that place indefinitely. Each branch of R.A.F. work has its own special requirements, and in time the designers will produce the special machine for that type of work which will be better than the adaptation of the G.P. machine. At times whispers are heard that the Air Department at the Admiralty is not too well satisfied at receiving adaptations of types designed for other objects rather than having machines designed specifically for Fleet work. The fighters and day bombers of Air Defence of Great Britain need great climbing powers and high speed at high altitudes. For army co-operation work what is called for is very high speed and great speed-range at a much lower altitude. If we were to go to war mainly equipped with G.P. aeroplanes, we should run the risk of being outclassed in each branch of air work by specialist machines in the hands of the enemy.

There is another reason for maintaining a variety of types which was not mentioned by the writer of the article, and it is probably the most cogent reason of all. Without a healthy aircraft industry we cannot have a healthy Air Force, and therefore in our equipment policy we must always have in mind the welfare of the industry as well as the immediate requirements of the Air Force. We must take the long view, and not merely think of immediate conveniences. If and when the Foreign Office sees a real chance of war looming in the not-distant future, then it will probably be the best policy to hurry things up and equip every squadron with the very latest type of machine for its own class of work and to reduce the number of types in use to a minimum—though each type should be a specialist type. In time of peace, however, it is good policy to employ a number of different types, not all of them necessarily the best, simply in order to keep the aircraft industry alive and well.

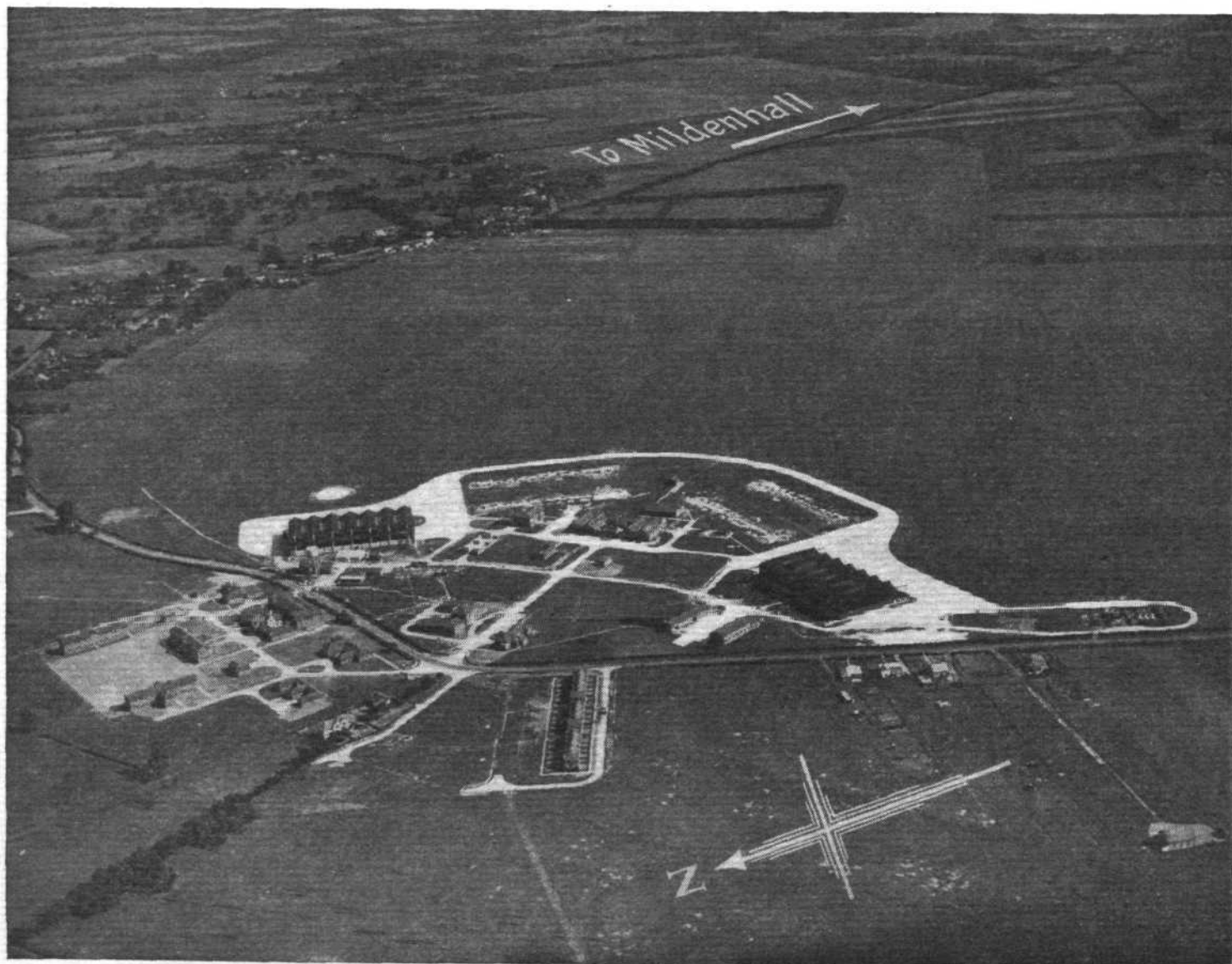
The Great Adventure

DETAILS of the preparations for the start of the England-Australia Air Races for the money prize and trophy presented by Sir MacPherson Robertson in connection with the Centenary Celebrations of the State of Victoria and the City of Melbourne have now been made public by the Royal Aero Club. As our readers will be aware, the start will begin at Mildenhall aerodrome, Suffolk, on October 20. It was originally understood that competitors would be permitted to take their machines to Mildenhall from early in October, but it is now announced that this aerodrome will not be opened until Saturday, October 13. Competing machines will be "accepted" on that day and until 4.30 p.m. on the next day. The supplementary regulations issued by the Royal Aero Club point out that any competitor who has not presented his aircraft by then will render it liable to exclusion from the race. It should be observed that it is not specifically stated that any machine which arrives after 4.30 p.m. on Sunday, October 14, will be excluded. We consider it unwise to be vague in regulations of this nature. Either the machines must be at Mildenhall by that time or they need not be there. If not, then what is the latest time they will be "accepted"? There was a similarly vague phrasing in the wording of the original regulations, which stated that competing machines should conform

substantially to ICAN requirements. Naturally, competitors wanted to know by how much they might fall short of ICAN requirements.

It has long been realised that in cases where the tanks of a competing aeroplane cannot be filled to capacity without the machine exceeding the maximum gross weight permitted it under ICAN requirements, there is likely to be an opening for disputes at control points. It has now been laid down that in such a case "adequate means of checking the tank contents must be provided and submitted for calibration and sealing to obviate the necessity of having to drain and refill the tanks at control or other checking points." This obviously places the onus on the competitor.

A point in the MacRobertson regulations which is not, perhaps, always fully appreciated is the stipulation that competing machines must comply ("substantially") with the ICAN take-off requirement which demands that a machine must be able to clear an obstacle 20 m. (65.6 ft.) high in a distance of 600 m. (656 yards) from standing start. This is a safety measure in that it ensures that machines are not flown in an overloaded state in the race. An aeroplane capable of passing this take-off test and still having on board enough fuel to cover the longest stages in the race (2,530 miles for the Mildenhall-Baghdad section, and 2,300 miles for the Baghdad-Allahabad section) must of necessity be a very efficient aeroplane, not only aerodynamically but structurally and in the matter of fuel consumption.



MILDENHALL AERODROME: The starting point of the England-Australia Race on October 20th for the MacRobertson prize. (Flight Photo.)

The Outlook

A Running Commentary on Air Topics

"In All Essential Directions"

NOWADAYS, and in the near future when aerodromes used by regular lines become even more busy, the importance of giving the pilots a perfect view in all essential directions cannot be too heavily stressed.

Those who have flown, for instance, the D.H. "Dragon," 86, or 89, which are laid out with a single set of controls, are always high in their praise of the field of view obtained in these types, but the question is made a little more difficult when the operator requires both a chief pilot and an assistant pilot. On long routes it is, of course, essential that a commercial machine should be so arranged, and the passengers, in any case, usually feel more comfortable when there are two pilots.

In the design of the new F.36, Mr. Fokker has overcome the difficulty very well, and has, at the same time, given the machine a very "clean" nose. The one pilot, he feels, who is doing most of the flying should be given priority, so he is placed well out in the nose with a good view forward and downwards on each side. The second pilot is placed behind and to one side, and he, at his controls, still has a view that is almost, if not quite, as good as that obtained by either pilot in the more normal arrangement.

Anti-aircraft Units

IT is understood that the next Army Estimates are likely to be increased by new expenditure on the equipment of the artillery and engineer units of the Territorial Army to which is entrusted the ground side of air defence. There are thirteen batteries of A.A. guns allotted for the defence of London and ten more for the defence of home ports. A battery consists of four sections, each with two guns. The searchlight units are part of the R.E. Corps of the Territorial Army. The guns, searchlights, lorries and other items of equipment are of ancient pattern, and there is a shortage of such instruments as sound-locators and predictors. It is hoped that in all these respects the air defence units of the T.A. will shortly be brought completely up to date.

While this is good news, we must repeat, what we have often said before, that it is anomalous for the vital matter of air defence to be dependent upon Estimates not controlled by the Air Ministry. In one way it is anomalous that an important part of air defence should be entrusted to the Territorial Army. In saying this we intend no slight to the Territorials, whose record in the great war needs no apology. The original idea of a Territorial Army was that they should be second-line troops. In a future war, however, it is most probable that the anti-aircraft units and the squadrons of A.D.G.B. will be the first of all to engage the enemy. The Territorials will, in fact, be part of our first line of defence. So long as the crews of the guns and searchlights are trained up to the very high pitch which is essential, we are quite content that the men should be citizens defending their homes. It does not, however, make for confidence that their equipment should be provided by the War Office, which is not responsible for air defence. The units should belong, not to the Territorial Army, but to the Auxiliary Air Force. Then the Air Ministry would be able to see that their equipment was all that it should be.

Divided control does not make for victory in war, and the present arrangement is a bad instance of divided control.

Transport by Air

WHEN discussion turns on Air Transport it is far too often assumed that the chief or basic problems are those concerning the operation of aeroplanes for the transportation of passengers or freight by air. They are not. The whole subject is one of transport. It demands, for its successful accomplishment, transport-minded people, people who are versed in the carriage of goods and passengers, in the problems of attracting those goods or passengers, and in retaining their custom when they have got them. The operation of the aeroplanes, trains, motor coaches, or any other vehicles is the engineering side of the undertaking, and as such subservient to the main problems.

These views were borne out by the tone of the 8th Annual *Air France* Dinner, held in London last Friday. M. Louis Allègre, the managing director of that vast concern, referred to the "Travel Trade." He omitted all but the smallest reference to the aviation side of his interests. Similarly, Mr. J. Bamford, the London manager, who organised the dinner, reserved for himself the toast to the "Booking Clerks"—the "Backbone of the Travel Trade," as he called them. A true measure of their importance indeed! It is time that many of us in aviation reorientated our ideas and admitted that it is the experience of our Hillmans and Thurgoods and similar people which we want; not a better appreciation of our own ideas as to what aeroplanes ought to be and how they ought to be used.

Accident Reports

IN the last few days there have been three tragic accidents to British civil aircraft, and the public is apt to be concerned when three fatal accidents come one after the other. Probably the bookings for regular air services to the Continent will not be affected at all, but there is a general feeling abroad of shaken confidence. This feeling may have the effect of cutting down applications for short service commissions or even for admissions to Cranwell; and at a time when the Royal Air Force is expanding such a feeling of nervousness on the part of parents would be unfortunate. At such a time the best way to restore confidence is to make public the report of the inspector of accidents on each of the tragedies. In each case, obviously, something was wrong, and if the public knows that the errors (whatever they may have been) have been recognised and that steps are being taken to prevent a repetition of the same thing, confidence will be restored.

The present position as regards publication of reports on accidents is governed by a statement made in the House of Lords in March, 1931, by the then Air Minister (Lord Amulree) in reply to a question by Lord Londonderry. The Air Minister said that in future the conclusions of the inspector of accidents would be published in all cases of accidents in this country to British aircraft plying for hire or reward which involved loss of life or serious injury. There would also be publication in other cases which presented special features or where useful lessons could be learned.

In one of the recent cases it may be held that the machine was not at the moment of the accident "plying for hire or reward." The flight on which it was engaged was due to its having been engaged on one business operation and it was then on its way to another business operation. A mere pleasure flight it certainly was not. It is to be hoped that no strictly legal interpretation of Lord Amulree's words will prevent prompt publication.

ENGLAND—AUSTRALIA RACE

Arrangements at Mildenhall : Further news of competing machines

CERTAIN important regulations for competitors in the England-Australia race are set out in a pamphlet entitled "Supplementary Regulations III" issued by the Royal Aero Club. It is laid down therein that the pilot in charge of a machine must report, with his aircraft completely erected and bearing the necessary certificates of airworthiness, at the starting point seven clear days before the commencement of the race, or at such other time as is specified. Mildenhall Aerodrome will be open to competitors from Saturday, October 13, and aircraft will be accepted up to 4.30 p.m. on Sunday, October 14. Any pilot not presenting himself and his aircraft by the time specified will render it liable to exclusion from the race.

During the six days prior to the race, each aircraft will be examined by technical officials in order to obtain the necessary particulars for the handicappers and the official race log book. The checks will include an "all up" weighing test with full tanks and load for the race, and any competitor with a machine the "all up" weight of which exceeds the maximum permissible load specified in his certificate of compliance with the I.C.A.N. requirements must be prepared to make such adjustments as may be necessary. In all cases where tanks cannot be filled to capacity without exceeding the permitted load, adequate means of checking the tank contents must be provided and submitted for calibration and sealing. The weighing of aircraft up to a loaded weight of 10,000lb. will be undertaken at Mildenhall. Machines exceeding this weight will be required to proceed to Croydon or Martlesham for weighing and certification.

Emergency Rations

In accordance with the conditions of the race, every aircraft must carry sufficient food and water to maintain life for the pilot and each member of the crew for three days. The minimum amount of drinking water in this connection has been fixed at 1½ gallons per person. The amount of food will be left to the discretion of each competitor, subject to the officials in charge being satisfied that it is reasonable. Emergency rations, if carried in suitable containers, and sub-

mitted for weighing and sealing prior to the start, may be included as pay-load for the purpose of the handicap race.

Other emergency equipment required by the conditions, namely, lifebelts and smoke signals, will not be included in the pay-load.

Accommodation at Mildenhall

Hangar accommodation is available at Mildenhall for the majority of the machines in the race. Aircraft with a span exceeding 80ft. may, however, be required to picket in the open. After reporting at Mildenhall, machines are required to remain at the starting point until the commencement of the race, and flights may be made only with the consent of the controlling authorities. It should be noted in this connection that the aerodrome is not equipped for night flying.

The public will be admitted for the start at 1s. per head, and there will be an enclosure for cars at 2s. each.

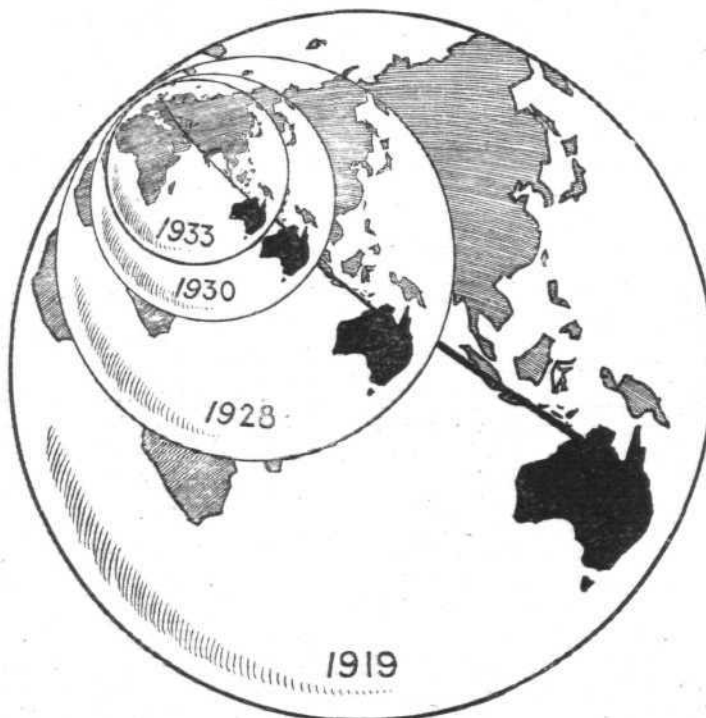
The Start

At 6.30 a.m. on Saturday, October 20, or as soon thereafter as weather conditions permit, the race will start. Competitors will be despatched at short intervals, the necessary corrections in time being made at the Singapore control, which will be notified by wireless of the starting time of each aircraft. It is expected that the maximum period of adjustment at Singapore will not exceed 30 minutes. During this period no work on the aircraft may be done, but pilots and crew are free to leave the machine.

A meeting of all competitors will be held in the Competitors' Lounge Marquee at Mildenhall at 5.30 p.m. on Sunday, October 14, at which the preliminary organisation will be explained in detail.

News of Competitors and Machines

The Airspeed A.S.8 (two Siddeley "Cheetah" VI's) to be flown by Capt. Neville Stack and Mr. S. L. Turner, has made its first test flights. A bed is included in the equipment, so that the pilots may rest alternately while the machine is in flight. Other equipment includes a Plessey



OUR SHRINKING WORLD: A Graphic Representation of the manner in which the aeroplane has reduced the Time of Travel. In 1919 Keith and Ross Smith took 27 Days 20 Hours. In 1928 Bert Hinkler reduced that to 15 Days 12 Hours. By 1930 Kingsford Smith had reduced the Time to 9 Days 21 Hours 40 Minutes, and last year the same Pilot cut the Time down to 7 Days 4 Hours 44 Minutes. The England-Australia Race will doubtless bring the smallest Globe down to about half that of 1933.



NO. 58: The Airspeed A.S.8 (two Siddeley "Cheetah VI") which will be flown by Capt. Stack and Mr. Turner, is similar to the Airspeed "Envoy" in general design, but has more powerful engines. (Flight Photo.)



NO. 54: The Bleriot III (Mistral Major) will probably be flown by Challe and Molinier, who do not expect their Wibault 366 to be ready in time.

wireless receiving set, blind flying instruments, and probably a P.B. automatic control.

Sir Charles Kingsford Smith, who had hoped, when he set out for London on Saturday last to break the Australia-England record, was forced to return to Sydney, after flying 1,100 miles, for repairs to the N.A.C.A. cowling over the "Wasp" engine of his Lockheed "Altair." The special certificate issued to Sir Charles by the Australian Defence Ministry embodies a statement from the American Department of Commerce to the effect that the machine has a satisfactory gross weight of 6,700lb. The machine was expected to leave on October 3.

Flt. Lt. E. H. Fielden, who was to have flown Mr. Bernard Rubin's "Comet," will not participate. The names of Flt. Lt. G. H. Stainforth and Mr. Smirnov, the K.L.M. pilot, have been mentioned as possible substitutes.

The "Irish Swoop"

Col. Fitzmaurice made test flights in his Bellanca monoplane *Irish Swoop* between September 24 and 26. The machine was then crated and put on board the s.s. *Bremen*, which left New York on Saturday and is due to arrive at Southampton to-day, October 4. From Southampton the Bellanca will be taken to Eastleigh Aerodrome for re-assembling and trial flights, prior to reporting at Mildenhall on October 14. We learn that the weight of the machine empty is 3,600lb., which is about 600lb. lighter than Mr. Bellanca estimated in the first instance. A special radio direction finder recently introduced into the U.S. Navy is installed. Col. Fitzmaurice is especially pleased with the 700 h.p. Pratt and Whitney "Twin Wasp Junior" engine, which certain European Governments have been trying to obtain permission to import. Only the Irish Free State has been able to secure the authorisation of the American Secretary of War to obtain this engine.

The wings of the *Irish Swoop* are painted green, and the fuselage white. Both the Irish Free State and the Vatican are represented in the colour scheme.

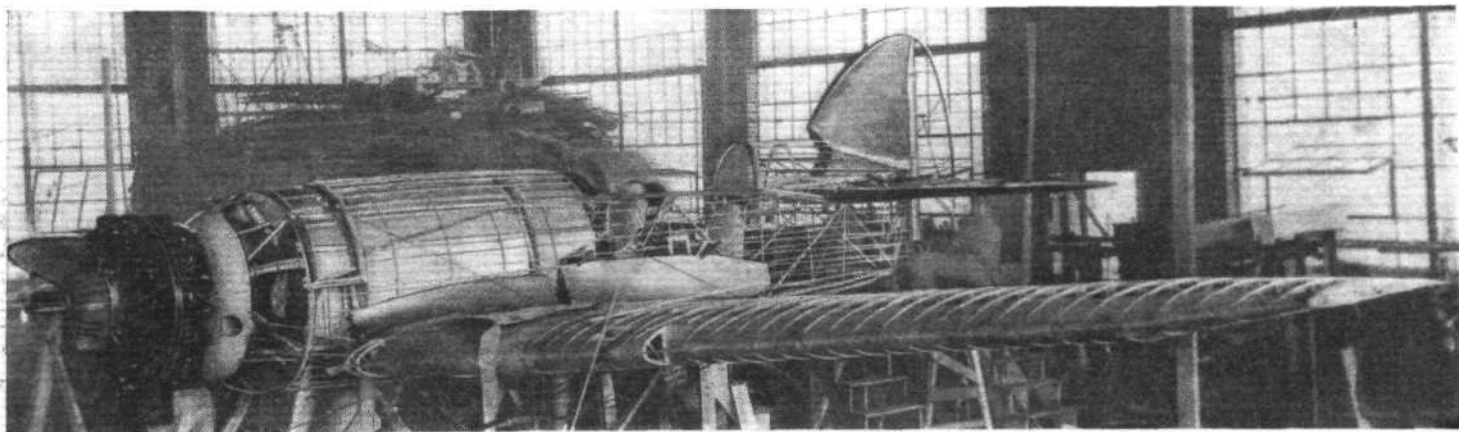
Roscoe Turner's Boeing

Col. Roscoe Turner and Clyde Pangborn, the pilots of the

Boeing 247-D, flew in this machine from Seattle to Los Angeles, non-stop, in five hours ten minutes, at an average speed of 204.6 m.p.h. From Los Angeles they flew to New York, stopping at Wichita and Pittsburg, at an average speed of 188 m.p.h. Performance figures of the standard version of the Boeing 247-D which have been recently released give a cruising speed at 5,000ft. of 184 m.p.h. and a service ceiling of 21,400ft.

Entertaining the Competitors

Donations to the Hospitality Fund for entertaining competitors in the England-Australia race lately received by the Royal Aero Club are as follows: G. H. H. DuBoulay, £2 2s.; L. P. Hirsh, £1 1s.; Capt. A. R. Prendergast, £5; Charles F. Hill, £1; H. Geoffrey B. Linnell, £5; A. Ogilvie, £5; Lt. Col. Sir F. McClean, £3 3s.; Cecil E. Lynch-Blosse, 10s. 6d.; M. F. Wren, £1; A. Collinge, £1 1s.; H. P. Bowler, £1 1s.; A. Q. Cooper, £1 1s.; R. F. Little, £2 2s.; *The Aeroplane*, £5 5s.; T. N. Stack and S. L. Turner, £2 2s.; Brian Lewis, Ltd., The Hon. Brian Lewis, and C. Clarkson, £5 5s.; Lord Willoughby de Broke, £10; The Hon. A. E. Guinness, £5; C. H. Tutt, £1 1s.; E. Holzak, £1 1s.; Arthur Carpmal, £1 1s.; Leslie L. Irvin, £5; The Hon. E. A. Cochrane, 18s.; Capt. E. G. Thompson, £1 1s.; J. Lees Jones, M.P., £1; Spencer Freeman, £25; H. F. Buxton, £1; Lt. Col. A. Hamilton Gault, £5 5s.; Major O. G. G. Villiers, 10s. 6d.; Col. Sir Joseph Reed, £2; Sir John Siddeley, C.B.E., £10; W. P. Crawford-Greene, £1 1s.; Phillips and Powis, £1 1s.; Major J. C. Savage, £2 2s.; E. H. Thierry, £3 3s.; W. S. Shackleton, £1 1s.; Major Henry A. Petre, £3; The Hon. G. R. Rodd, £1 17s.; M. L. Bramson, £1 1s.; W. Cannell, £5; Lt. Col. F. C. Sheldermine, £1 1s.; Frank Smyth, £1 1s.; N. Couper, £1 1s.; J. R. Ashwell-Cooke, £1 1s.; Air Vice-Marshal A. L. Longmore, £3 3s.; H. V. Newton, £1 1s.; H. D. Cutler, £2 2s.; T. H. O. Richardson, £1 1s.; H. Hemming, £2 2s.; J. Horsfall, £2 2s.; S. Davenport, £1 1s.; Rolls-Royce, Ltd., £50; Capt. F. Goring, 5s.; Miss Anna McClean, £2; Edward G. H. Forsyth, £1 1s.; Sir John V. Carden, Bart., £5.



THE "IRISH SWOOP": Col. Fitzmaurice's Bellanca monoplane (No. 29) in course of construction.

ENGINES IN THE ENGLAND-AUSTRALIA RACE

Air-cooled radials, mainly of American design, are the most widely used power plants in the machines entered for the race. Next in order of numbers are the comparatively low-powered British "in line" air-cooled types. Liquid-cooled engines are represented by two obsolescent types, and two modern examples of very high power. This week we give the main points of the British engines in the race. The foreign engines will be dealt with next week.

Armstrong Siddeley Motors, Ltd.

FIVE "Cheetah" engines represent this company. Three Mark Vs are installed in the Airspeed "Couriers" numbers 14, 26 and 52, and two Mark VIs, supercharged to a certain degree by geared fans, and provided with new long chord cowlings in Captain Neville Stack's Airspeed A.S.8, number 58.

The "Cheetah" V is a seven-cylinder, single-row, direct drive, air-cooled radial, weighing 560 lb. and rated at 275 h.p. at 2,100 r.p.m. It is fitted with a mixing fan, driven at engine speed. Bore and stroke of its cylinders, which, incidentally, are similar to those used on the 560 h.p. fourteen-cylinder "Panther" VI engine, are 5.25 in. and 5 in. respectively. The "Cheetah" VI is similar in general construction to the Mark V and gives 272 h.p. at normal r.p.m. at sea level, and 295 h.p. at 6,000 ft., which is its rated altitude.

The Bristol Aeroplane Co., Ltd.

A little Bristol "Cherub II" two-cylinder horizontally opposed air-cooled engine is fitted in the Waugh and Everson monoplane, number 55. The "Cherub III" is an improved version of the original "Cherub" used by many aircraft in the Air Ministry Light Aeroplane Competitions in 1924. With a capacity of 1,228 c.c. the normal output is 33 h.p. at 2,900 r.p.m. and the maximum power 36 h.p. at 3,200 r.p.m. The weight is 95 lb., and the fuel consumption, for an output of 30 h.p., is two gallons per hour.

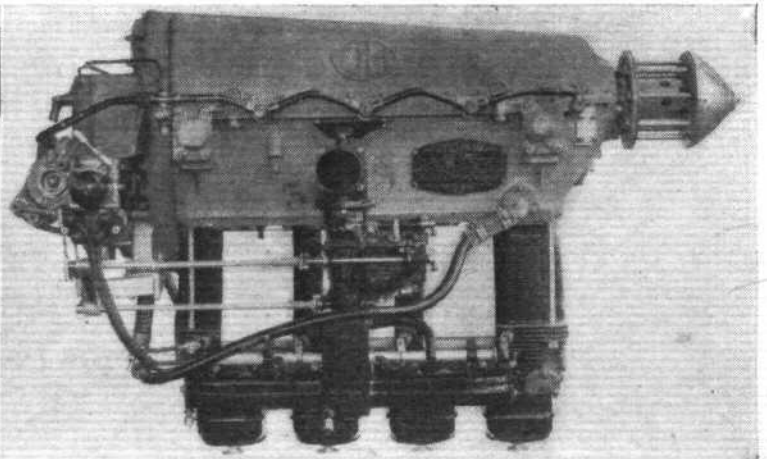
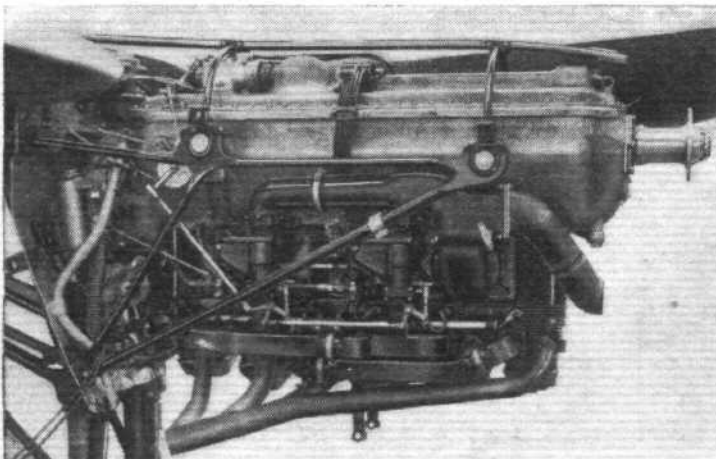
The De Havilland Aircraft Co., Ltd.

It is not surprising that "in line" air-cooled engines of De Havilland manufacture are the most numerous representatives of Great Britain. The "Gipsy," I, II, III, "Major," and "Six" have all been tried out in actual service long enough to establish for them an excellent reputation for reliability. The De Havilland "dark horse" in the race is the special high-compression racing version of the "Gipsy Six." Two of these engines are fitted in each of the three D.H. "Comets," numbers 19, 34 and 63. "Gipsy" engines can trace their ancestry back to the original experimental "Gipsy" installed in the De Havilland "Tiger Moth" single-seater racing monoplane which, flown by Capt. Hubert Broad, established a world's speed record for light aeroplanes in 1927 with a speed of 186 m.p.h. Six times "Gipsy" engine aircraft have crossed the Atlantic.

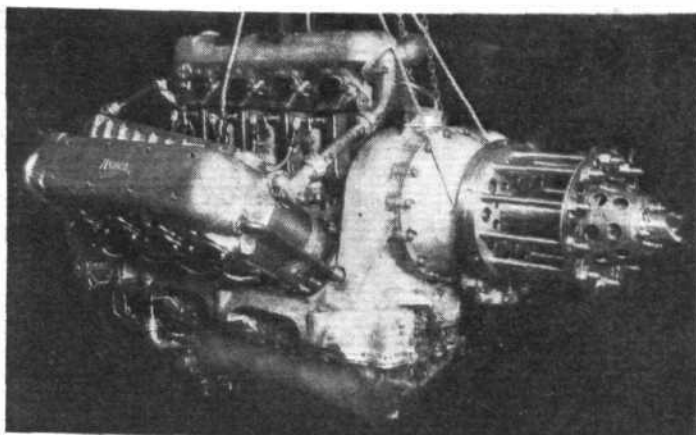
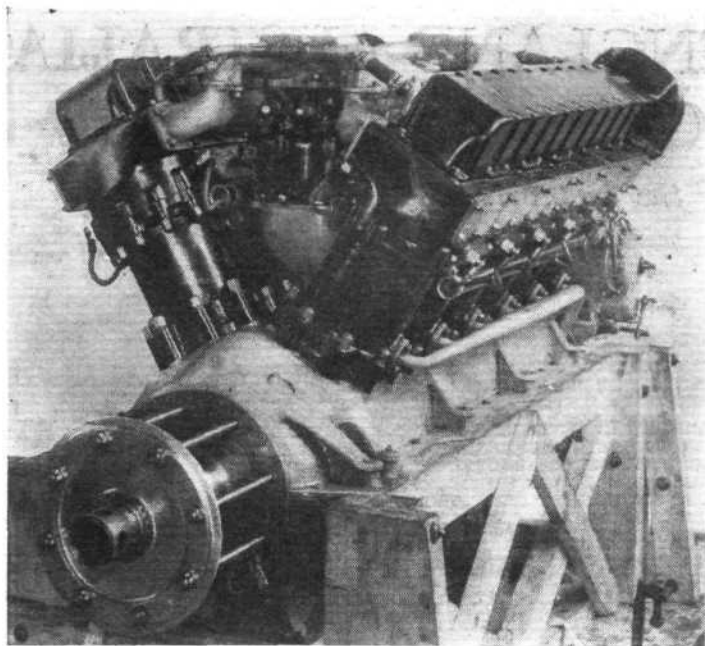
The "Gipsy III" is a four-cylinder inverted air-cooled engine giving 120 h.p. at 2,200 r.p.m., and weighing 300 lb. With an increase of 4 mm. in bore over the "III" the "Gipsy Major" inverted engine gives about ten more horse power and uses 9.75 gallons of fuel per hour at full throttle, or three-quarters of a gallon per hour more than the "Mark III."

Like the earlier "Gipsies," the standard De Havilland "Gipsy Six" used in the "Dragon Six," number 60, was designed by Major Frank Halford, F.R.Ae.S. With nearly a 50 per cent. power increase the engine has a frontal area no greater than that of the "Gipsy Major," and an overall length of but 6 in. more. The type is a six-cylinder inverted, air-cooled, direct-drive engine, with a capacity of 9,186 c.c., the compression ratio being 5.25:1, the normal power 185 h.p. at 2,100 r.p.m., and the maximum output 200 h.p. at 2,350 r.p.m. Complete with such accessories as electric starter, fuel pumps, etc., the engine weighs 470 lb., and the fuel consumption at cruising speed is between 9 and 9½ gallons per hour.

The power plants of the three "Comets" are standard "Gipsy Six's" altered to give increased power output, decreased fuel consumption, and reduced drag. By using a modified piston and cylinder head the compression ratio has been raised from the standard figure of 5.25:1 to 6.5:1. The engine operates satisfactorily at this ratio on standard service fuel to D.T.D. specification 224. This fuel will be used for the race. To take advantage of the variable pitch airscrew which is being used, the normal speed of the engine has been increased to 2,350 r.p.m. The use of this airscrew has necessitated a new crankshaft with an appropriate hub fixing at the front end, and the provision of a temporary oil supply at 100 lb. per sq. in. in order to rotate the blades in their sockets when the fine-pitch position is required. This high-pressure supply is obtained from the usual engine pumps through duplicate oil relief valves, and in no way effects the normal lubrication system. The control of the pressure and the pitch position is in the hands of the pilot. A special coupling is provided at the rear of the crankshaft for driving a rotary vacuum pump which is used to operate the Sperry directional gyro. By making certain modifications to the valve rocker gear and its casings, the overall height of the engine has been reduced by 26 mm. and the shape of the cowl much improved. An alteration to the induction manifolds and the use of a smaller scoop for the cooling air has decreased the overall width of the engine. The standard arrangement of alternative hot or cold air supply for the carburetors is retained in case adverse atmospheric conditions are encountered during the race. Warm air, if required, is taken through a flame trap from the vicinity of the cylinders. In its modified form the engine develops, on the bench, a maximum output of 224 h.p. at 2,400 r.p.m. at sea level. In flight this performance is further improved by the effects of the high forward speed on the carburettor air intake. Flying at an altitude of 10,000 ft. the full-throttle output is 160 h.p. at 2,250 r.p.m., and the fuel consumption 0.48 lb. b.h.p./hr.



"GIPSIES": (Left) The special D.H. "Gipsy Six" installed in the "Comets," which gives 224 h.p., and (right), the D.H. "Gipsy Major" of 130 h.p.



WATER COOLED: (Left) The Fairey "Felix" 12-cylinder V type of 460 h.p. used in the "Foxes," and (right), the Napier "Lion" XI.A rated at 530 h.p. as installed in F/O. Davies' Fairey III F.

The Fairey Aviation Co., Ltd.

Some of our readers who have interested themselves in aviation only during very recent years may be somewhat puzzled when they hear of Fairey "Felix" engines in the Fairey "Foxes," numbers 35 and 62. In 1925 Mr. C. R. Fairey visited the United States and acquired the manufacturing licence of the D.12 type from the Curtiss Company, giving it the name "Felix."

The engine is a twelve-cylinder water-cooled V type of very small frontal area. Bore and stroke are 4.5 in. and 6 in. respectively. With a weight of 680 lb. the normal output is 460 h.p. at 2,400 r.p.m., and the fuel consumption is 0.53 lb. per b.h.p./hr.

D. Napier & Son, Ltd.

Two Napier engines appear on the entry list—one a "Lion" and the other a "Javelin." The "Lion" is, perhaps, the best-known water-cooled "broad arrow" type ever produced, and for many years has been used in a variety of service and civil aircraft with very great success, and only now is being replaced by more modern types. "Racing" versions of the "Lion" have repeatedly distinguished themselves in Schneider Trophy seaplanes. The "Lion" in the Fairey III F, number

15, entered by F/O. C. G. Davies, is of the series XI.A., and is a type which is still used in the R.A.F.

The "Lion" XI.A. is a twelve-cylinder "broad arrow" water-cooled engine with a bore of 5½ in. and a stroke of 5½ in. It is a geared type and has three carburettors, one for each bank of cylinders. With a dry weight of 995 lb. the engine is rated at 530 h.p. at 2,350 r.p.m.

During recent years the Napier Company has worked towards the development of air-cooled "in line" engines, and the "Javelin" installed in the Percival "Gull," number 21, was the first of this type of engine marketed by the company. It is a six-cylinder inverted engine with a bore of 4½ in., a stroke of 5½ in., and a compression ratio of 5.3 : 1. The weight is 443 lb., and at 2,100 r.p.m. the output is 155 h.p. Maximum permissible power is 174 h.p. at 2,400 r.p.m., the fuel consumption being 0.62 lb. per b.h.p./hr. at full throttle, and the oil consumption between 2 and 4 pints per hour.

Pobjoy Airmotors, Ltd.

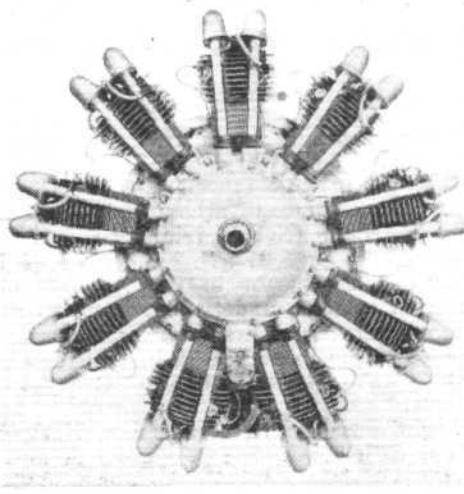
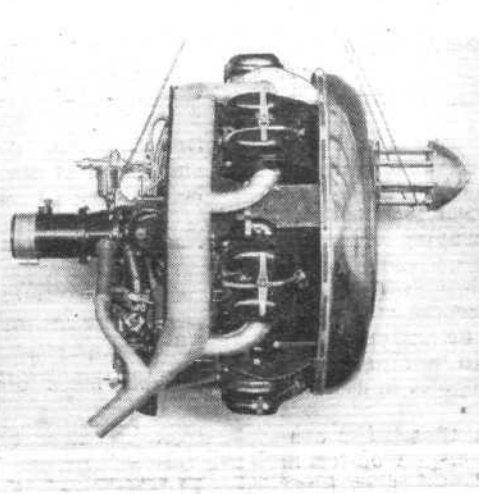
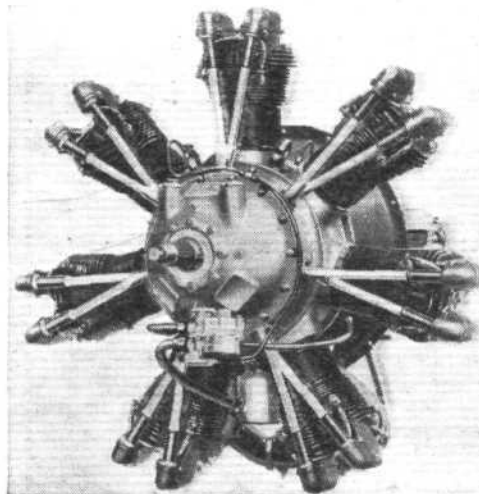
The Short "Scion," number 38, is fitted with two Pobjoy "Niagara" engines. The "Niagara" may be regarded as a development of the "R"

type, which was produced a few years ago to meet the demand for a low-powered light-weight engine for installation in light aircraft. This year the King's Cup Race was won by a machine powered with two "Niagara" engines. The type is one of the lightest in the world for its power, which it delivers at an unusually high speed. It is a seven-cylinder geared radial with a capacity of 3,825 c.c. Normal power is 84 h.p. at 3,200 r.p.m., but at maximum r.p.m. (3,500) the power is 90 h.p. Fuel consumption at full throttle is 0.6 pints per b.h.p./hr., and the dry weight is 150 lb.

Wolseley Motors, Ltd.

Although this company has but recently re-entered the field of aero engine manufacturers, the first engine it built was flown in 1909. During the War the company produced engines of various types and powers, probably the best-known example being the "Viper."

The Wolseley A.R.9 installed in the Airspeed "Envoys," numbers 3 and 56, is a nine-cylinder air-cooled, geared radial of conventional design with a capacity of 588.6 cubic inches. At normal r.p.m. (2,200) the output is 185 h.p., and the maximum power is 203 h.p. at 2,420 r.p.m. At 90 per cent. power the engine uses 11¼ gallons of fuel per hour.



AIR COOLED: The 275 h.p. Siddeley "Cheetah" V, 84 h.p. Pobjoy "Niagara" and 185 h.p. Wolseley A.R.9.

WHO'S WHO IN THE ENGLAND-AUSTRALIA RACE

Introducing Some of the Competitors

(Continued from page 983)

Racing No. 50.—G. R. Hutchinson, P. Redpath and D. H. Vance (U.S.A.)

WHEN Honorary Colonel George R. Hutchinson opens up on the subject of Aviation "there is no telling when the end will be reached." He says so himself, in a very chatty letter from New York, dated June 30. But since then no word has been received from him; which is disappointing, because he had promised further information about his co-pilot and radio operator.



Col. G. R. Hutchinson

Hutchinson was born, of English parents, at Baltimore, Maryland, on February 11, 1902. In the seven years since being granted a transport licence he has owned 17 aircraft and, in the course of some 3,000 hours, has flown over 48 countries: United States, Canada, Labrador, Greenland, the British Isles, Davis Straits, the North Atlantic and South America. He expresses particular pride in the fact that his wife and their young daughters, Janet Lee and Kathryn, have accompanied him by air across 32 countries and 3 continents, and that, in journeys exceeding 150,000 miles, they have "never suffered the slightest injury or experience that would in any manner cause us to lessen our flying activities and fondness for aviation. Truly, we are a family who practise what we preach." You have, of course, read of "The Flying Family Hutchinson" (not to be confused with the Swiss family MacRobertson)—well, these are they. Dad's other hobby is golf. He has developed airports, operated air lines, and conducted aerial surveys. He is a prolific contributor to his country's newspapers and periodicals. Incidentally, he has delivered 612 lectures to universities and schools, has written and dramatised 204 radio scripts (on aviation adventures) over the network of the National Broadcasting Co. of New York, and appeared *en famille* on stage and screen.

Peter Redpath, Hutchinson's navigator and co-pilot in the race, is a Canadian, an air-line pilot, and a navigation instructor. He has accompanied the family on various long flights and shares the notable adventure in which their Sikorsky flying boat came down amid Greenland's icy mountains.

Donald H. Vance, third member of the team, is a thirty-six-year-old American; first-grade radio operator. He has served five years as radio operator in the U.S. Navy, and with the R.C.A. Victor Co. as radio engineer.

Racing No. 33.—J. H. Wright and—? (U.S.A.)

Even in the State of New York (where they call him "Jack"), John Henry Wright is acclaimed a tough guy. This respectful title is well merited. He laid the foundation for it with a course of athletics at Clarkson Polytechnic Institute, Potsdam (N.Y.), reinforced it by playing American football as a professional, and cemented it on the Mexican border as a sergeant in the National Guard, with Victor McLaglen as tame understudy. And to place the matter beyond all further dispute, he has had some fifteen years' experience in the insurance business. It had to be *that* or real estate. As a sideline he has collected 130 trophies in aviation contests.

Wright was born at Clark Mills, N.Y., in 1895. His connection with aviation is post-war. A machine-gun officer in the 28th Division, A.E.F., he was wounded at Fismes (near Château Thierry) three months before the Armistice, and spent his convalescence at Issoudon, learning to fly. March,



1919, found him still in France, when and where he married a nursing sister from Richmond, Virginia. The bridal couple returned to America, set up house in Utica, N.Y., and raised a family of three. For a while Wright combined insurance work with local representation of American Airways, Inc. Finally he took up racing in real earnest and joined the Air Racing Pilots' Association of America. His recent successes include the 1931 New York-Cleveland race, the Mexican Government Trophy won at the 1932 Miami meeting, and the 1934 world's record (also at Miami) for "ships of the first category" with a speed of 169.8 m.p.h.

Organised by Robert C. Edmunds (chairman), the Utica Civic Flight Committee is hard at work on a "drive" for additional funds to finalise the local lad's preparations for the race to Australia. His Lambert Monocoupe (145 h.p. Warner "Super-Scarab"), purchased some months ago, has since been entirely rebuilt by the Lambert Aircraft Corporation at St. Louis, and the radial engine completely overhauled by the Warner Aircraft Engine Co. at Detroit.

Wright's co-pilot in the MacRobertson contest is not yet selected.

FLIGHT

and the

ENGLAND - AUSTRALIA RACE

SPECIAL arrangements have been made by *Flight* to deal exhaustively with the MacRobertson Race.

A special number will be published on October 18th, which will constitute a

GUIDE TO THE MACROBERTSON RACE

Details of competing machines, notes about competitors, and news of the final preparations at Mildenhall will be included, as well as a series of exclusive illustrations of instructive value.

Regular features of the journal will be retained.

The succeeding issue, dated October 25th, will give further last-minute news of the race, scenes at the official start and progress of the competitors, and much other information of general interest.

ORDER EARLY!

FLIGHT of October 18th and October 25th.

PRIVATE FLYING

A SECTION FOR OWNER-PILOTS
AND CLUB MEMBERS.

THE excellent flight made by the young Australian, Mr. James Melrose, from the Commonwealth to England in 8 days 9 hours—which constitutes an unofficial record for a solo flight—leads our thoughts to the possibilities of long Empire air journeys for the ordinary private aircraft owner. The fact that Messrs. Melrose, Mollison, Scott, or Butler have flown between the two countries in from eight to ten days does not mean that the average pilot can expect to emulate such remarkable performances. We are told that Mr. Melrose was the lucky recipient of an aeroplane on his twenty-first birthday, and that he at once decided to fly to England. Making very good progress in the first two or three days, he thought that he would try to beat Mr. Mollison's record, in which object he was successful. Such flights as those mentioned require great endurance, and the pilot must be very fit physically and capable of persistent effort with a limited amount of sleep.

Touring to Australia

IT is not to be supposed that with the machines at present available to the owner-pilot the journey can, in the ordinary course of events, be done in such good time; the route itself does not, in these days, present any inordinate difficulties. Ground organisation has improved very considerably during the last few years, and it is safe to say that, throughout the whole route to Australia, aerodromes exist not more, on an average, than two hundred miles apart. Furthermore, supplies of petrol and oil are available, or can easily be made so, at depots laid down by our leading oil companies. The success of the record flights are in large measure due to the facilities offered by these companies. Not only do they supply fuel and lubricants, but they have amassed a good deal of useful flying data which they are always ready to place at the disposal of pilots.

The Melbourne Centenary Celebrations, and the Air Race which has been organised in that connection, have brought the subject of Empire flying much to the fore. The MacRobertson Trophy Competition is something more than a mere competitive event; it will undoubtedly bring home the possibilities of Imperial communications by air to many who have looked upon such flights merely as stunts so far as the private pilot is concerned.

All types of machines will be used in the race, from the fast commercial air liner to the aeroplane in everyday use by the owner-pilot. As a result, therefore, fresh standards for the journey for various types of aircraft will be set up, and the owner-pilot who aspires to Imperial travel will benefit by the experience gained.

As far as the commercial type of machine is concerned, the race will serve to show what can be done. The speeds which may be expected from the latest type of passenger aircraft which have been entered will undoubtedly tend to emphasise the relatively leisurely schedules of our Imperial air lines.

It will be seen that the chief requirements on the Australia route have been largely catered for. Landing

grounds within easy distance are already available, and fuel supplies have been organised to a practical stage. The private pilot who wishes, therefore, to fly to Australia need not be discouraged by the apparent magnitude of the undertaking.

At the same time he should not embark on it too lightly. A good deal of preparation will be required—the day has not yet come when the freedom of the air can be translated into fact. Various countries have their own ideas with regard to routes which may be followed. Prohibited areas abound, and no pilot can afford to ignore the regulations laid down. It follows that a considerable amount of information will be required for this purpose, and the private pilot may well hesitate when he considers the problems involved. He will find that he requires permits to fly in some countries, and he must obtain visas for his passport in many of the territories in which he intends to land.

NOTES

by

LORD SEMPILL

A.F.C., F.R.Ae.S.

The Work of the A.A.

CLEARLY, the air traveller will require some assistance if he is to cope successfully with the preliminary preparations which must be made, unless he has unlimited leisure in which to pursue his enquiries. He will be well advised to consult the Aviation Department of the Automobile Association in the first instance, for this organisation, under the able direction of Mr. Ivor McClure, a pilot of wide experience, has amassed a wealth of data which enables it to smooth the way. The Department will undertake the preparation of maps, will obtain all official sanction, and will, in fact, if required, do everything necessary short of flying the machine.

If, on the other hand, the pilot has time to spare for the preparation of his own maps, the A.A. will give him every assistance, and will place at his disposal any information available. They have compiled a large library of maps of many routes, marked with all particulars essential to the pilot, and these may be hired at reasonable rates. The method of mounting in strip form, with an index on each section of the fold, makes these maps very convenient to handle in the air.

Nevertheless, it is a pity that there should be so much, and often unnecessary, work involved in the planning of a long-distance tour. The fast private aeroplane loses some of its usefulness if weeks of international preparation are necessary before the owner may set off to the ends of the earth.

Everybody hoped that the aeroplane would automatically reduce the height of the walls of formality surrounding each nation, but so far the invention of flying appears to have made nations even more sensitive about their rights—and officials even more excited about pocket Kodaks. All the papers and passports in the world cannot keep the really dangerous people out of a country.

In the meantime, Mr. McClure and his staff are to be congratulated on the efficiency and courtesy with which the Aviation Department is run.

FROM THE CLUBS

Events and Activity at the Clubs and Schools

LIVERPOOL

The winter routine comes into effect from Tuesday, October 9, and flying will then start at 10.30 on every morning except Monday, which is the club "day off." During the fortnight ended September 27 a total of 96 hr. 10 min. was flown at Hooton Park by the Liverpool and District Aero Club.

BENGAL

Bad weather hampered flying considerably during August at the Bengal Flying Club, making the return somewhat smaller than usual. The total flying hours were 65 hr. 55 min., with two first solos.

On August 13 the instructor, Mr. K. D. Knocker, with Mr. A. Roy, flew from Maheshganj to Berhampore and return to inspect the landing ground there.

CAMBRIDGE

Flying times for the week at Marshall's School remain above the average for the time of the year. Two new members, Messrs. Dukes and Marraige, have joined the school, both having previously flown solo, the former on "Fleet" machines in America, and the latter on "Bluebirds" and "Redwings." Mr. C. Branston made a navigation flight to Filgrave, and several charter flights were made.

CINQUE PORTS

Four new flying members joined the club last week, and Mr. J. T. Leacock, who only joined last week, made a first solo. Six members obtained their "A" licences.

In spite of delays owing to the bad weather the German guests all arrived safely. They left early on Tuesday, September 25, and arrived in Cologne the same morning. The club has since received many telegrams of thanks and appreciation.

BROOKLANDS

Flying hours totalled 109, dual and solo last week, and new members include Miss Barnard, who is taking her "B" licence, and Mr. Webb, who is the second member of the Masonic and Country Flying Club to join. Mr. O'Connell and Mr. Brookes did their night flights.

The German guests were unable to reach Brooklands owing to the bad weather, but several members flew in formation to Lympne on Sunday to welcome them.

Captain Davis and Captain "Ted" Walter have been away on a sales tour round England, but bad visibility made the outward journey a nightmare, and several calls which were to have been made on the way to Renfrew had to be cancelled. The journey home was more successful, but business in the north seems poor.

RANGOON

The total flying time during August at the Rangoon Flying School proved to be a record—86 hr. 15 min.—and this was particularly encouraging in view of the numerous interruptions due to bad weather. Actually there was an increase all the way round, even on charter work, when the month is compared with July, a fact that has doubtless been partly caused by the new "sliding scale" of flying charges.

Five new pupils have enlisted, thirteen flew solo for the first time, two passed the flying tests for the Indian licence, and one actually qualified. The school had its first lady pupil in the person of Mrs. J. A. Drysdale, but, unfortunately, she could not be passed as fit for flying. However, there is another prospective lady-pupil. One young Burman, Mg. Thant, from Mandalay, took a joy flight, decided he liked flying, and crammed fourteen hours in two weeks of poor weather.

The Passing of the 504K

It is with a feeling of deepest regret that the members of the Southern Aero Club and their instructors are saying farewell to the Le Rhone Avro 504K's, which have been used since the club was formed in 1924. No better aircraft were then available either for joy riding or for instruction.

Mr. Cecil Pashley, the chief instructor, maintains that, even now, the type has certain advantages over modern light aircraft for teaching people to fly. "Controlling a rotary with suitable combination of throttle, fine adjustment, and 'blip' switch, while making a difficult approach, ensures that the pupil's mind is not wandering from the job in hand," he says. Although, of course, for many years members have had the choice of several modern machines, it is surprising how loth they are to relinquish the old 504.

CARDIFF

The fourth annual Hatfield-Cardiff Air Race—and a Garden Party—will take place next Saturday, and it is hoped that the entry list will be a record one. A dinner-dance for members is being held in the evening at the Blue Horizon.

It is possible that an Imperial Airways "Hercules" will come down to Cardiff for the occasion.

HATFIELD

Owing to the very gusty weather during the week the flying time at the London Aeroplane Club was 65 hr. 45 min. only. Three new members include H. Lacholche, the French ace. Mr. Martin Sharp and Mr. A. Carr completed their "A" tests.

The machines belonging to the Bombay Flying Club left on their return trip on Saturday, September 29.

The "E. Hicks" Navigation Challenge Cup will be competed for on Sunday, October 7.

IRISH AERO

During the past two weeks the Irish Aero Club has done 30 hours instruction work. On September 25 Mr. G. Pond, of Atlantic fame, flew over to Baldonnell with Mr. Warren Penny in an Avro "Cadet." He is arranging to receive his "Vulzee" monoplane from the States for the Australian race, and this will be delivered at Baldonnell.

On the 29th an Airspeed "Courier" flew into Baldonnell with a full load of English papers, the Irish newspaper strike still being in force.

NORFOLK AND NORWICH

In spite of the rain, which started to fall soon after lunch, the Garden Party at Norwich on September 22 was quite successful. It was attended by members of the Women's Engineering Society, and more than a hundred guests sat down to tea in the clubhouse.

One or two of the flying events were, however, carried out, as well as a Treasure Hunt, and the Clay Pigeon Shoot received good support. After tea Mr. H. N. Holmes welcomed the visitors, and Mrs. Mollison replied.

KUALA LAMPUR

On August 25 the Kuala Lumpur (Federated Malay States) Club held their third Annual Gymkhana and Display. Quoting the Chief Instructor, Mr. Newark, this was "the biggest and best of the kind seen in Malaya, thanks to the co-operation of the R.A.F. and of the Penang Flying Club, though I say it, perhaps, as shouldn't!"

Seven "Vildebeestes" from No. 100 Squadron, stationed at Singapore, gave a display of air drill, after the usual fly-past by sixteen machines, three "Moths" of the K.L. Club gave an exhibition of flour bag bombing, during which several direct hits were made, and an ab initio member, Mr. Leong Chong Tat, gave a complete display of aerobatics, including a "bunt." Afterwards this pilot was presented with the Nauer Cup for aerobatics from the hands of H.H. the Sultan of Selangor.

In the "V.C." race three pilots had to dash forward, rescue three "distressed" damsels, strap them in their machines, and fly round a course. It was won by Mr. Ioke Yaik Foo, who rescued Miss Lee.

Thereafter Mr. Newark gave a display of crazy flying and, with Mr. Greenwood, instructor of the Penang Flying Club, gave a "fighting" demonstration and an "instructor and pupil" turn. Finally, Mr. Newark "aerobatted" with an illuminated machine as darkness fell. Dancing closed the day.

A Netherlands Air Map

Those private owners who contemplate flying over the Netherlands will be interested in a new map which has just been compiled by the Air Touring Office, Keizersgracht 588-599, Amsterdam C.

The map is on a scale of 1 in. to 6.3 miles, and is produced in either sheet, wall, bound, or weatherproofed forms at prices ranging from Fls.2.50 to Fls.6.00. It is printed in seven colours, and, apart from the usual special signs, radio masts are noted with their heights, dangerous overhead H.T. cables are shown, and the coast lights beyond a certain candle-power indicated. Both railways and waterways are shown particularly clearly.

The number of aerodromes, incidentally, is surprisingly high in the Netherlands.

DESFORD "RAINED OUT"

THE weather appears to make a little habit of turning out badly for the Leicestershire Club affairs, and for their "At Home" last Saturday there was no exception. An afternoon of practically impossible flying weather, with poor visibility and heavy rain, was sandwiched between two more or less good days.

Nevertheless, a few stalwarts had pushed their way through from various places as far afield as Hull and Hanworth, and four "Audax" from No. 26 Army Co-operation Squadrons came from Catterick—but stayed the night. One of these, incidentally, must have had a bad time, for the pilot slipped into Desford some time after the other three.

Two machines, a Klemm "Eagle" in the hands of Mr.

E. G. Hordern, and a Blackburn B2 Trainer, flown by F/O. Ball, were demonstrated very convincingly before the rain became too heavy and the announcer, Flt. Lt. Stringer, advised the visitors to try the tea marquee.

Thereafter, matters became rather worse, and the signal of distress was finally given when Mr. Lindsay Everard and his party left in the *Leicestershire Vixen* for Radcliffe. Visitors from the nearer aerodromes took off into the murk—Flt. Lt. Rose giving a short demonstration of the Miles "Hawk Major" before flying off to find the best railway line from Leicester to Sywell—and the others decided to stay for the Saturday "party." Mr. Lindsay Everard, by the way, only returned from his Continental tour that morning.

COMMERCIAL AVIATION NEWS

Arc en Ciel Again

Last week, with the help of the Couzinet monoplane, *Arc en Ciel*, the mail left South America on Tuesday and was delivered in Paris on Thursday morning. The Atlantic crossing was made in 23 hr. 34 min.

Basrah's Airport

The future Basrah aerodrome, which is at present under construction, will be provided with a modern hotel having accommodation for twenty passengers, a mobile searchlight for night landings, direction-finding wireless installation, and meteorological services. It is situated at Margil, on the right bank of the Shat-el-Arab, and within a mile of the railway terminus and wharves.

D.L.H.'s Millionth Passenger

Since Deutsche Luft Hansa took over in 1926 from the assorted German air lines the company has carried a million passengers. This gives a figure, incidentally, of 280 million passenger-kilometres, and equals (to imitate the popular statisticians) the transport of 400 persons to the moon and back! During the period 5,860 tons of luggage, 9,250 tons of freight, and 2,740 tons of mail were carried on the various services.

A Tasmanian Aerodrome

The Commonwealth Government have completed the purchase of 227 acres of land at Cambridge, Southern Tasmania, for the development of a new aerodrome. This aerodrome is intended as the terminus for the Melbourne-Tasmania service which completes the England-America route. The mail contract for this section has, it will be remembered, been obtained by Tasmanian Aerial Services, who will touch alternately at King Island and Flinders Island.

America in Europe

The influence of that most advanced of American commercial aeroplanes, the Douglas D.C.2, will soon be felt strongly in Europe. Orders for some fourteen have been received by Fokkers from various European air lines, among whom are Swissair, who have ordered three, the Avio Linee Italiane S.A., the Deutsche Luft Hansa, and the Oesterreichische Luftverkehrs A.G., who have ordered one each, and the Lineas Aereas Postales Espanolas, who have ordered two.

The Fokker F.22

Four examples of the F.22, which is a scaled-down version of the F.36, fitted with four Pratt and Whitney "Wasps," are being built by N.V. Nederlandsche Vliegtuigenfabriek—in other words, Fokkers. The performance of this small machine will be almost identical with that of the F.36.

As opposed to the arrangement in the larger machine, where there are seats for two passengers on either side of the gangway, the F.22 will have two passengers on one side and one on the other. Twenty-one passengers will be carried in that ordered by A.B. Aerotransport, which will be the first real "restaurant aeroplane," and rather fewer, naturally, on the three to be put on the Batavia route, in which sleeping accommodation will be provided.

To Nigeria

When the new air service, to be run by the Campagnie Générale Trans-Saharienne, is started, British Nigeria will be less than a week's travelling time from London, instead of sixteen days as at present.

The service will alternate with the fortnightly Saharan car service, and will link Colomb Bechar, which is reached by train from Algiers, and Kotonou (Dahomey). There is an air service between London-Paris-Marseilles and Algiers, and Kotonou is comparatively close to Lagos—as distances go in Africa.

The Channel Accident

Hillman Airways have had an excellent record for safety, and it is unfortunate that the loss of one of the machines on the Paris service on Tuesday occurred just when the winter season, with all its difficulties, was beginning. There were six passengers and pilot on board the D.H.89 (two "Gipsy Sixes"), which had only recently been delivered, and all lost their lives.

Judging from the fact that a wireless call for help was despatched, the machine made a forced landing near Folkestone in the Channel and was badly broken up by the impact. Croydon, however, did not receive the call.

The Shoreham Accident

One of our newest operating companies, London Scottish and Provincial Airways, Ltd., suffered a tragedy on Saturday afternoon, when a machine on the Leeds-Heston-Paris service crashed in the Kent hills near Shoreham. Three passengers and the pilot, Mr. R. M. Smith, were killed instantly.

Judging from witnesses' accounts, the machine, after leaving the base of the low clouds, circled, began a spin, and hit the ground before it could be pulled out of the recovering dive. As the Airspeed "Courier" was, in common with the others in the service, fitted with a turn and bank indicator, it seems possible that the pilot stalled the machine while endeavouring to pick up his position, and not while flying "blind," or that, realising the proximity of H.T. wires, he pulled up too steeply. Whatever the evidence obtainable from the wreckage, the cause is likely to remain at least as much of a mystery as that of the accident at Meopham, Kent, in 1930.

Inland Air Mail Alterations

The Postmaster-General announces that, in consequence of the alterations which have been made in the Railway Air Services for the winter, the following modifications have been made in the inland air mail services from London.

Air Mail letters for Belfast, posted after 7 p.m. in the evening up to midnight in ordinary posting boxes in Central London, or in time for the last collections elsewhere in London, will be delivered in Belfast on the following afternoon. Air Mail letters posted up to 8 a.m. in the Air Mail posting box at the Head Post Office, E.C.1, and at corresponding times in other Air Mail boxes will be delivered the same afternoon in Belfast. These arrangements will secure a saving of about fifteen hours over ordinary mails.

The air service from London to Birmingham, Manchester, and Glasgow will provide advantage for letters posted in the blue Air Mail boxes in time for the first morning collection.

The air service to the Isle of Man is being suspended.

THE FOUR WINDS

ITEMS OF INTEREST FROM ALL QUARTERS

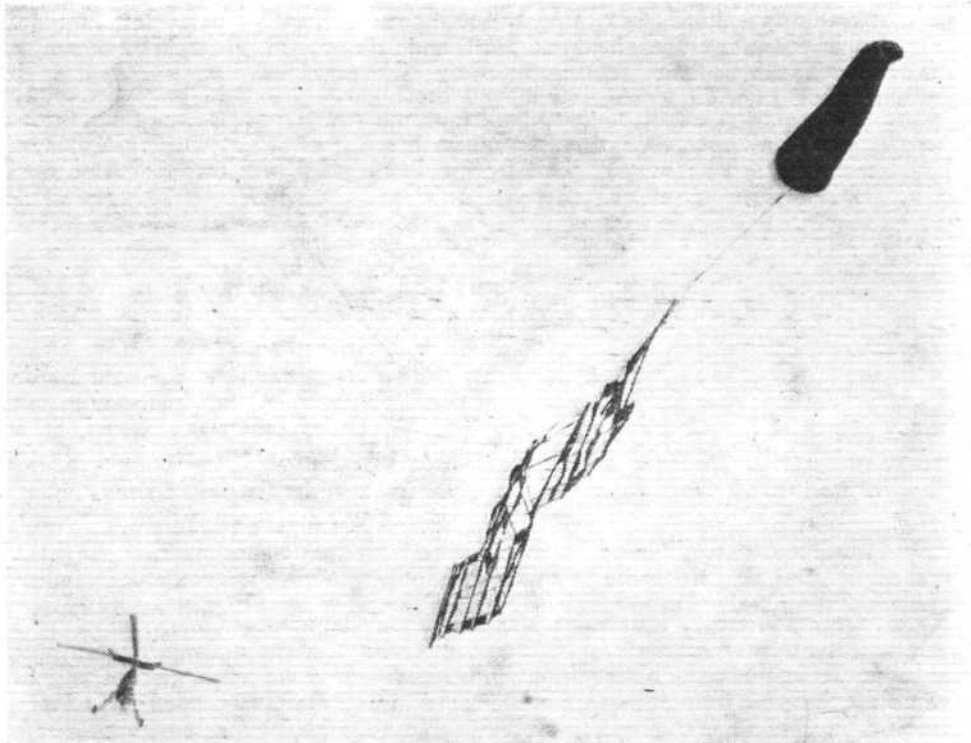
Miss Thompson's Australia Flight

Miss Freda Thompson, a 22-year-old Australian girl, set out from Lympne in a D.H. "Moth" ("Gipsy Major") on September 28 to fly to her home in Melbourne. She was not intending to beat Miss Jean Batten's 14 days 23 hours for the journey, but said she would try to better it if conditions allowed. She intended to make Marseilles her first stop, and some anxiety was felt at her non-arrival there. It was learned later, however, that she had made a forced landing at Romans, near Lyons. On Saturday she flew on to Marseilles, thence to Rome. She arrived at Brindisi next day, and after a short stay left for Athens. Unfortunately bad weather forced her down at Megava, 20 miles from Athens, and in landing the machine was damaged, although she herself was uninjured. Miss Thompson hopes to continue the flight as soon as the machine can be repaired.

Twenty-five Years Ago

From "Flight" of October 2, 1909.

"One of the first landmarks of America which meets the eye of the visitor from Europe who lands in New York is the gigantic statue of Liberty, which stands at the entrance to the harbour, and on Wednesday last those who were returning from America on the *Lusitania* had an experience which will no doubt live for ever in their memory. As they were leaving the harbour Wilbur Wright rose in his aeroplane from Governor's Island, and, passing over the ship, made straight for the statue of Liberty, circling round it before flying back to his starting place a mile away."



NOT A NASTY ACCIDENT: But a new use for the Autogiro in trailing Kellett Sky Signs. The signs consist of large letters (seen end-on in our picture) joined together and attached to a drogue towed some 400 ft. behind the Autogiro. (Flight Photo).

Soviet Aeroplane Seized

A Soviet military aeroplane, carrying bombs and machine-guns, and equipped with wireless, was seized by Manchukuo troops last week at Manchuli, on the Manchukuo-Soviet frontier, where it landed for some unknown reason.

Prof. Piccard to Try Again

Prof. Piccard has announced that he proposes to make a new ascent into the stratosphere next year, when he hopes to attain an altitude of about 20 miles. He has placed an order for a new balloon with a Warsaw firm, and intends to start the ascent in Switzerland.

The Air Serpent

A boa constrictor has just flown the Atlantic. It formed part of the cargo of the *Croix du Sud* on the latter's last trip from Brazil to France.

A Parachute Broadcast

A German parachutist last week broadcast an account of his experiences while descending by parachute from 3,000 ft. over Staaken Aerodrome. He used a short-wave transmitter, and his report was picked up by the aerodrome receiving station. A record was made of his "talk," and this is to be broadcast from German wireless stations on October 6.



MEXICAN BUILT: The "MWT-1" long-range monoplane, designed by Dr. Michael Watter and built in Mexico. It is fitted with a Pratt and Whitney "Wasp" engine.



A "MULTIPLACE DE COMBAT." The Potez 54 shown here is fitted with two Hispano-Suiza Ybrs engines giving a maximum of 860 h.p. each. A top speed of 198 m.p.h. is claimed

A Long Arctic Flight

While carrying out an aerial survey of the ice in the Kara Sea recently the Russian pilot, Alexeev, flew from Dixon Island to Cape Chelyuskin and back, a distance of 1,119 miles, in thirteen hours.

A "Gull" for India

The Maharajah of Patiala has just ordered his third machine! It is one of the latest 3-seater Percival "Gulls," fitted with a D.H. "Gipsy Six" engine, and will be flown out to India by the Maharajah's chief pilot, Capt. Muir, in the course of the next few days.

Aircraft Wreckage Found

Wreckage believed to be a part of the French airliner which fell into the Channel a few months ago, was seen last week by Capt. J. B. W. Pugh, while flying above the Channel. The portion of a wing, marked A.U. 798, A.I.D. 789 C.S.Q., was also found on the seashore at Trearddur Bay.

Gen. Smuts Flying to England

Gen. Smuts, South African Union Minister of Justice, left Germiston on September 26 in an Imperial Airways machine en route for Croydon. He is on his way to Scotland to be installed as Rector of St. Andrew's University. South African Air Force machines escorted the airliner as far as Pretoria.

Taking It Easy

The other day Mr. Philip ("Bill") Bailey and Flt. Lt. Max Findlay were flying two "Puss Moths" home from Sywell. Mr. Bailey's machine was equipped with a B.P. automatic control. For between ten and fifteen minutes he left the controls, sat in the back seat, put his feet up on the instrument board, while the other "Puss Moth" flew "in formation" with the greatest of ease.

Special Number on Oct. 18

Flight will publish a special number on October 18 in connection with the England-Australia Race for the MacRobertson prize.

Airships or Super Liners?

The National Committee for aeronautics at Washington have urged the termination of the competitive building of costly super ships and recommended instead the development of a trans-oceanic dirigible passenger service. The Committee has informed the Federal Aviation Commission that it would be more economical to provide fast inter-Continental transportation by means of airships and large seaplanes than to continue the international race to launch lavish merchant liners. The Committee proposes that the Government should construct two experimental dirigibles for passenger service.

Aeroplane's Fall in Barcelona Street

A military aeroplane crashed into the main street of Barcelona on September 29, its two occupants being seriously injured, and a pedestrian slightly injured.

Newmarket Landing Ground

For the convenience of those wishing to travel to Newmarket Race meetings by air, the Stewards of the Jockey Club have approved the laying out of a private landing ground on the exercise ground to the north-east of the Rowley Mile Stand. The ground is now open for use by aircraft on all race days; no hangars have been erected, but picketing gear and chocks are available from the attendants. The charges are 2s. 6d. for each machine, plus 1s. each for all occupants.



A RETRACTED LANDING: Sir Alan Cobham's Airspeed "Courier" as it landed at the Haffar Aerodrome, Malta, during his recent attempt on the non-stop flight to India. Sir Alan only just reached the aerodrome by keeping the undercarriage retracted, thus prolonging the glide.

Diary of Forthcoming Events

Club Secretaries and others are invited to send particulars of important fixtures for inclusion in this list.

- Oct. 6. London to Cardiff Air Race and Cardiff Ae.C. Garden Party
- Oct. 7. Aviation Golf Meeting, Royal Porthcawl Golf Club Porthcawl.
- Oct. 12. Banquet to MacRobertson Race Pilots, Grosvenor House, Park Lane, 8 p.m.
- Oct. 18. "The Education of Aeronautical Engineers," R.Ae.S. Lecture by Prof. A. J. S. Pippard.
- Oct. 20. England-Australia Race for MacRobertson Prize. Start at Mildenhall.

- Oct. 25. "The Compressed Air Tunnel." R.Ae.S. Lecture by Mr. E. F. Relf. R.Ae.S.
- Nov. 8. "Speeds of Commercial Aircraft." R.Ae.S. Lecture by M. Louis Breguet.
- Nov. 15. "Flying Boats," R.Ae.S. Lecture by Mr. I. I. Sikorsky.
- Nov. 16-Dec. 2. 14th International Aviation Exhibition, Grand Palais des Champs-Elysees Paris.

MAGYAR PILOTA PIC NIC

(Continued from page 1,004)

AFTER lunch at the Grand Hotel, Hungary, on Tuesday, the party split up into two groups, the majority going off with the Professor (Professor Silan) on a sight-seeing tour of the town, while half a dozen of us went off to the St. Gelert Hotel Swimming Pool, with its artificial waves, for a swim.

After tea we returned to our hotel and changed. Later we went up into the old part of Buda to the home of Mr. Worth for cocktails. Mr. Worth's house stands on the top of the hill behind the Royal Palace, and is over one hundred years old.

That evening there was a banquet given by the Magyar Touring Club at the Dunapalota Hotel. The President, Dr. Julius v. Vermes, presided; the wife of the British Attaché and the Mayor of Buda Pest were among those present. At the conclusion of the dinner each member of the party was presented with a memorial plaque, and afterwards individual groups went to the various night clubs of the town, the Arizona being a particular attraction, as it has a revolving dance floor the centre of which can be lowered.

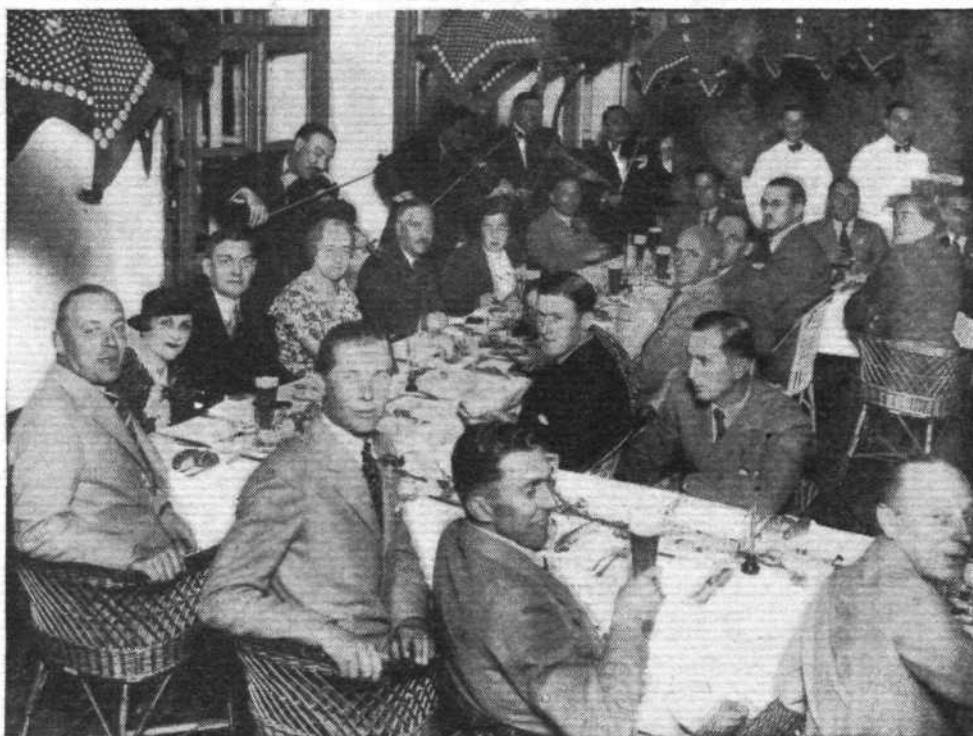
Homage to War Heroes

At 10 p.m. the next morning the party left for Mátyásföld Aerodrome, stopping at the Tomb of the Unknown Warrior, where Grp. Capt. Leckie placed a wreath on the grave.

On the way to Siófok, over a lot of big square ploughed fields that were extremely dry owing to the prolonged drought, we passed the transmitting station of Radio Buda Pest. This consists of one single steel mast 1,000ft. high; a piece of engineering of which the Hungarian nation is justly proud. The aerodrome at Siófok has a very rough surface, but is very close to the town.

The town has a central organisation with a number of buildings which are only apartments, and all meals are taken at the Central Restaurant. It has a marvellous view looking out between trees over Lake Balaton.

Lunch was presided over by Archduke Albrecht and given by the Athletic Club, represented by the President, Lt. Gen. Alex. de Algya-Papp, and its Vice-President, Lt. Col. Dezso



AT THE KAKUK : At a dinner given to the British visitors, the night before they left, by the Magyar Touring Club.

de Mary. After lunch, at 4 p.m., we left on the steamer for the other side of the lake, which is about 7 miles wide and at no place deeper than 3 metres. It is here that the famous fogas are caught. These fish have a very excellent flavour and are much in demand in Hungary. The net for catching them is laid and dragged by two tugs, and the ends drawn together; both ends of the net are then pulled in on a large barge to the accompaniment of a peculiar tattoo made by a man in a rowing boat. Sculling around inside the net he drives the fish into the farther end, where they are trapped in five sacs. We saw the whole process, including the grading and sorting. Quite a number of the best fish were thrown back into the lake, and in this way they are steadily improving the breed.

It was a beautiful evening, and in the setting sun we started back across the lake with a Gipsy band playing Hungarian melodies. A most romantic scene, until out of the darkness astern with a crash and a roar the Archduke appeared in a speedboat.

We finally returned at about 8 p.m. to a dinner given by the Fisherman's Association on the shore of the lake. We dined by the light of motor car headlights after watching the food being prepared over bonfires. Hungarian waitresses wore the national costume.

On Lake Balaton

Next morning we split up into groups and went sailing on the lake. Some went swimming. From our boat one of the party got left behind, so we had to launch the dinghy and go and rescue him.

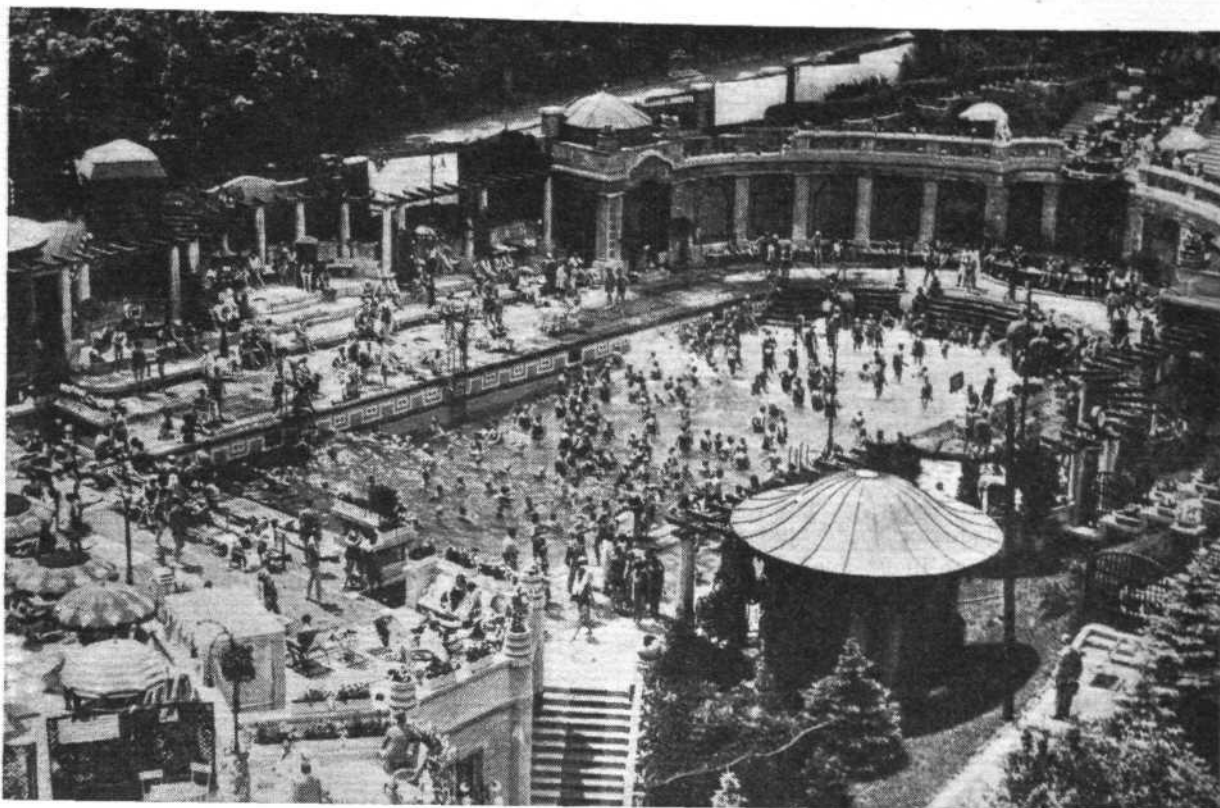
There was a buffet-lunch in the ballroom of the Athletic Club, and immediately afterwards the party returned to the aerodrome and left for Buda Pest. Mr. Henry Petre collected a subscription from each of the British visitors, and bought a silver card tray for presentation to the Magyar Touring Club.

Although it was a farewell dinner that night at the Kakuk Restaurant, everybody was very merry and we all enjoyed ourselves. This is one of the show restaurants of Buda Pest, and we were told that the Gipsy is very clever, making up his songs to suit the occasion as he goes along. Our hosts found it very amusing, and it was extremely interesting to watch. After dinner Grp. Capt. Leckie made a speech to the President, Dr. Vermes, and thanked him on behalf of the guests. The President, in reply, thanked us most charmingly for our gift. A short speech was also made by Professor Harry Silan, known to all and sundry as "The Professor."

We had an amazing good time, but it is quite impossible to describe the beauty of all the things we saw in Hungary, and there is not the least doubt that in the memory of those present the Magyar Pilota Pic Nic was the best picnic ever.



GUIDES AND MENTORS : The Director of Aviation (left) with his staff and the "Professor."



CROWDED BREAKERS: The swimming pool at the St. Gelert Hotel. The artificial waves made this bath a great attraction for those who managed to get into it!

For the organisation of the flying we have to thank Director Dr. Georg v. Rakosy and his assistant, Heinrich v. Szentkeresztessy, also Julius v. Csicsery and Major Stephen v. Grosschmidt, the Commandant of Mátyásföld Airport. Among those who looked after us while we were in Buda Pest were the

Vice-President of the Magyar Touring Club, Stephen v. Horthy, and Mr. Dezso Haag accompanied us on most of the flying expeditions. The general arrangements, including the hotel accommodation, were looked after by Mr. Ernest Kirchknopf, a charming gentleman with a fluent command of English."

FASTEST FROM AUSTRALIA

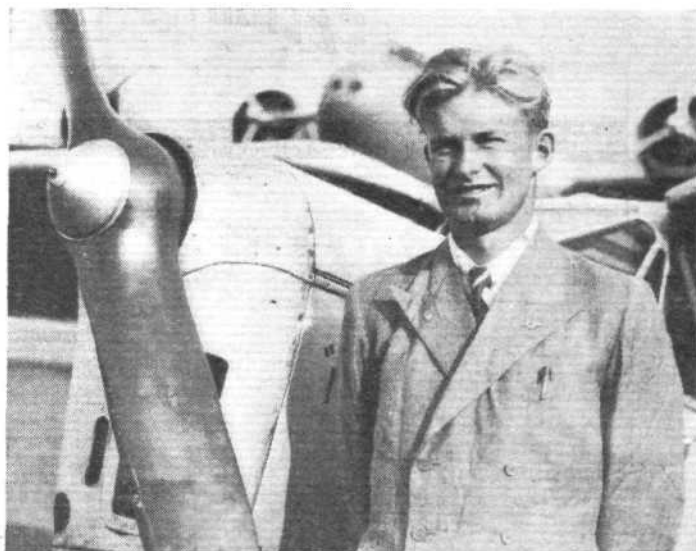
Mr. C. J. Melrose, Flying a D.H. "Puss Moth," Reaches Croydon from Darwin in 8 Days 9 Hours

THE fastest journey made between Australia and England was completed last Friday morning when Mr. C. J. Melrose landed his "Puss Moth" at Croydon. He touched at 7 a.m. and had completed the flight, without fuss or advance publicity, in eight days and nine hours.

Unfortunately, the flight was not officially observed, and cannot, therefore, be counted as a record, but Mr. Melrose improved Rubin and Waller's time by three hours, and Mollison's 1931 record by eleven hours. The average daily mileage during the flight was 1,200, and his penultimate "hop," between Cyprus and Lyons, covered 1,800 miles. Apparently he made rather a habit of starting very early in the morning and of landing early in the evening or afternoon for rest.

He started from Darwin at 6.30 a.m. (Australian time) on Thursday, September 20, reached Surabaya the same evening, was off again at 5.30 a.m. for Singapore, and landed at Victoria Point on the Saturday evening. On Sunday he flew on to Calcutta and decided there that he stood a good chance of breaking the record. On Monday he left at 2.5 a.m. and arrived at Karachi at 6.5 p.m.; on Tuesday he was off early again, reaching Basra at 3.10 p.m.; on Wednesday he left at 3.20 a.m. and landed in Cyprus at 3.10 p.m.; on Thursday he flew to Lyons; and on Friday to Croydon before breakfast. Actually, with a faster machine, he spent much less time in the air than Mr. Mollison spent in 1931.

His "Puss Moth" was fitted with extra tankage, bringing his still-air range to something over a thousand miles, but was otherwise standard, and it appears to have given him no trouble whatever. At Alor Star the aerodrome was inundated, and he hit the last of the monsoon near Calcutta, but otherwise his journey was uneventful.



AT CROYDON: Mr. C. J. Melrose photographed beside his "Puss Moth" soon after his arrival. In the background the Fokker F.XXXVI can be seen.

Mr. Melrose, it will be recalled, is flying in the England-Australia Handicap race, with a D.H. "Leopard Moth" entered by his mother.

THOUGH the wonders of infra-red photography are becoming widely recognised, this *Flight* photograph, taken by this means, is truly remarkable, if only for the magnitude of its subject—the whole of London and its environs, together with the Thames estuary, much of the Essex and Kentish coasts, and the North Sea beyond.

This unique photograph was taken by J. Yoxall, chief photographer of *Flight*, from a Hawker "Hart," piloted by Mr. P. E. G. Sayer, and flying at a height of 20,000ft. over Staines, Middlesex. Maj. H. Hemming, who specialises in air survey work, has had the following interesting facts compiled. The distance from the point below the machine to the horizon is the extraordinary one of approximately 180 miles, the length of horizon, which also shows the curvature of the earth, is some 140 miles, and the area covered by the photograph is several thousand square miles. At the time of exposure visibility to the naked eye was limited to the western suburbs. Points of interest are indicated in the key below.

All living objects strongly reflect the infra-red rays; thus grass and foliage appear almost white in the picture, and the London parks stand out clearly from the maze of buildings. The absence of large open spaces east of a line drawn through Battersea and Hyde Parks is most noticeable—silent witness to the need of a "lung" for the crowded East End. A fifth of England's population has its homes and work-places within the limits of the picture!

Of London, Blücher once said: "What a city to sack!" Could he have seen this photograph, surely his comment would have been, "What a blot on the landscape!" With this in mind, we dedicate this picture to the Smoke Abatement Society, the Playing Fields Association, and kindred organisations. . . .

FLIGHT Photo.



THE



METROPOLIS AND BEYOND

Remarkable Infra-red Panorama by a "Flight" Photographer

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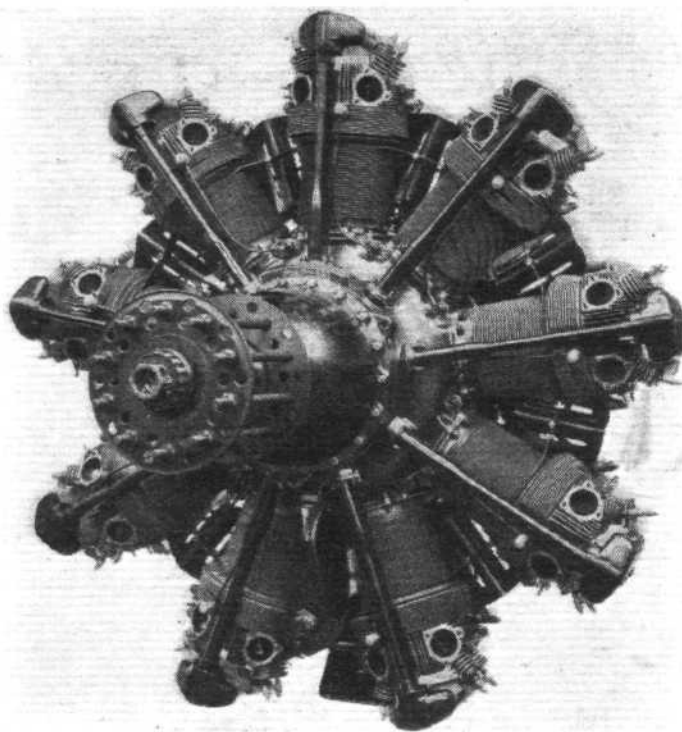
NEW BRISTOL ENGINES

Improved types designed for use with Service fuel of 87 minimum octane value

AN increase in power of approximately 15 per cent., with a substantial improvement in fuel economy under cruising conditions, has been obtained in a new range of Bristol engines known as the "Mercury" VI-S., "Pegasus" III, and "Pegasus" IV. These engines were the first British power plants to be successfully type tested on the new Service leaded fuel. The "Mercury" VI-S. is in full quantity production, but the "Pegasus" III, and IV, are being built at present in limited numbers for prototype aircraft. Some of these engines, installed in new Service aircraft at the R.A.F. and S.B.A.C. displays this year, attracted a great deal of favourable comment.

Detailed Improvements

In matters of installation the new engines are generally interchangeable with existing types, to which they are structurally similar. However, they incorporate several important innovations involving the general strengthening up of components

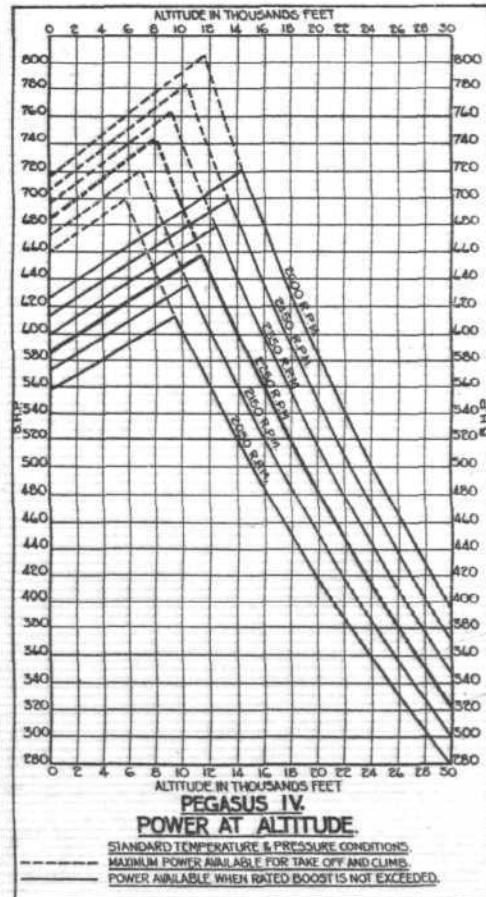
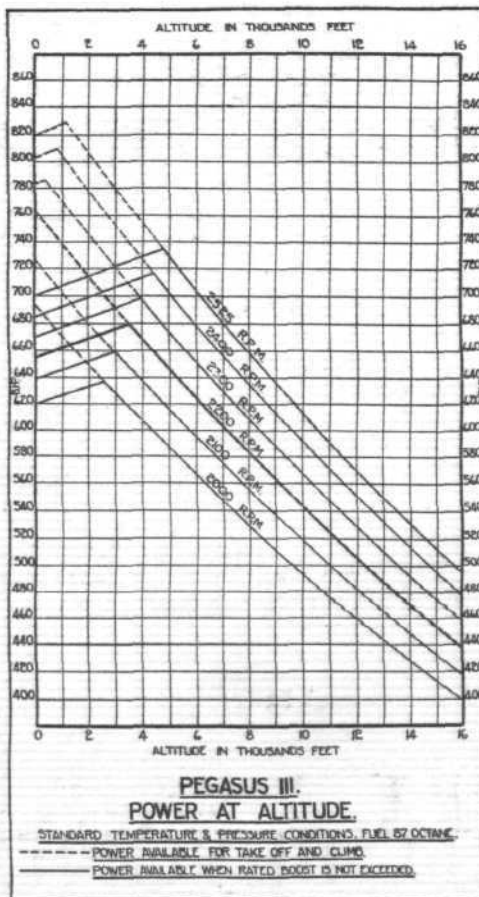
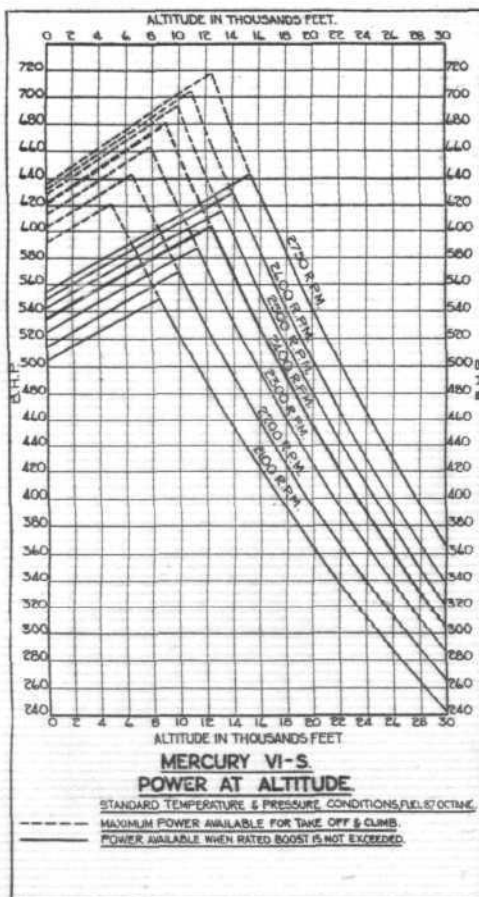


THE "PEGASUS" III: This type gives a maximum of 750 h.p. at 4,750 ft. Note the baffles for use when a low drag cowl is employed.

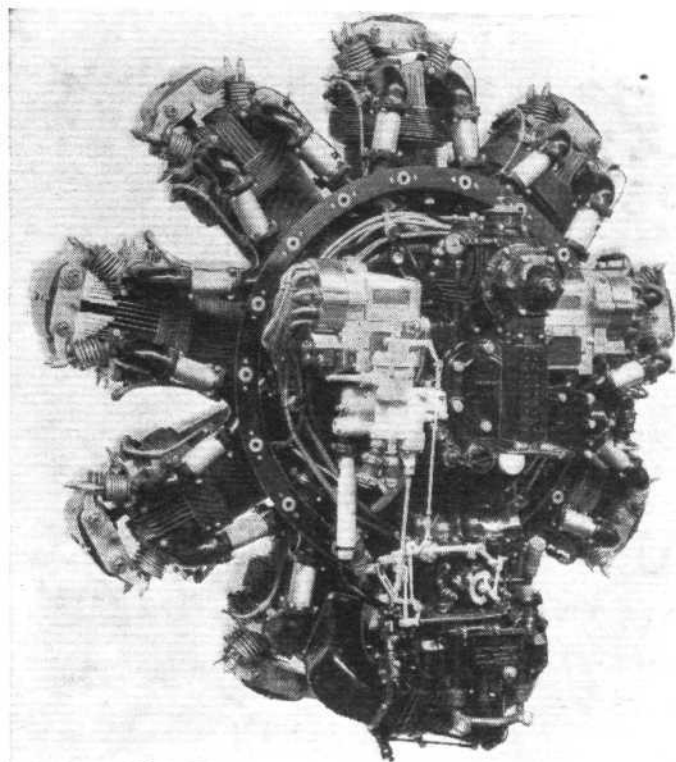
affected by the increased speed and power output resulting from the use of the new high octane fuel. Weight has been kept within the limits of previous types by the extended use of magnesium alloys. Additional cooling area has been provided on the cylinders, ensuring adequate cooling when the engines are used with low-drag cowlings. The cylinder barrels are of special alloy steel. Sodium cooled exhaust valves have also been standardised to eliminate the "pitting" experienced on ordinary valves used in engines operating on leaded fuels. Crankshaft and connecting rod systems have been strengthened to meet the requirements of the higher power output. The latest crankshaft is now hardened all over. This treatment provides an exceptionally hard bearing surface, which, with the higher fatigue range afforded by the new

material used, prolongs the life of the crankshaft.

Detailed modifications have been made to the full-skirted piston now standardised in "Mercury" and "Pegasus"



Power curves of the new Bristol engines.



THE "MERCURY" V.I.S.: At 15,500 ft. this type delivers a maximum of 645 h.p. It is intended for installation in high performance fighters.

engines. This step was the outcome of continuous high-power testing under "ground boosted" conditions.

Carburation

Much attention has been paid to the question of carburation as affecting performance and consumption. The new type engines are fitted with carburettors which incorporate a delayed action pump permitting positive and rapid acceleration to be obtained with economical tuning for cruising conditions, while a slow-running cut-out is provided to

prevent the possibility of a "hot" engine continuing to "slow run" after switching off.

Combined exhaust system and ring cowling is available for all three of the new types. This system, as applied to the "Mercury" V.I.S. fitted in the Gloster "Gauntlet," was illustrated in *Flight* of April 26th, 1934.

The "Mercury" V.I.S.

Intended primarily for installation in high-performance fighter aircraft, this engine is of the "high supercharged" type, maintaining normal pressure in the induction system up to 15,500 ft. at maximum r.p.m. It has completed Air Ministry tests made for the purpose of clearing the use of excess speed, gathered during terminal velocity dives, up to 30 per cent. more than the normal rated r.p.m. of the engine. It may be noted that during terminal velocity dives, when the airscrew "windmills" the crankshaft, there is a relative increase in the dynamic loadings and stresses of 70 per cent. or more. The "Mercury" V.I.S. which passed its Air Ministry type test in September, 1933, also passed a 100 hours test at the excess boost normally permissible only for take-off and climb. The last four hours were run at maximum r.p.m.

"Pegasus" III and IV

The "Pegasus" III has an exceptionally high power output for take-off and climb. A "medium speed" type supercharger is fitted, which maintains normal pressure in the induction system up to 4,750 ft.

The "high supercharged" member of the new "Pegasus" family is the "Pegasus" IV, which, although larger in overall diameter and rather heavier than the "Mercury" V.I.S., has a substantially greater power output, making it particularly suitable for aircraft heavier than single-seater fighters operating at altitudes above 15,000 ft. This engine maintains normal pressure in the induction system up to 14,500 ft. at maximum r.p.m. The design of the engine has been carefully considered from the aspect of adequate cooling on the climb, when installed with a low-drag ring cowling. Extended flight tests have been made at moderate climbing speed with entirely satisfactory results.

METEOROLOGY

Official Annual Report

THE Annual Report of the Director of the Meteorological Office, for the year ended March 31, 1934, has just been issued. (H.M. Stationery Office, Adastral House, Kingsway, W.C.2, price 1s. net, postage extra). The first part of the Report is divided into two sections:—(a) Synoptic Meteorology, or that branch dealing with weather; and (b) Climatology, or that dealing with climate.

In (a) we are told of the information that is required by a forecasting station; how it is obtained, and the stations collecting it; how the information is handled and the use that is made of the data at headquarters. Forecasts for the general public, shipping, agriculture and aviation are also dealt with in this section.

Climatology, the report states, is a much older branch of science than Synoptic Meteorology, the chief object of collecting climatological records being to have information available regarding the type of weather which may be anticipated in any locality. The preparation of data, the observations, rainfall stations, crop-weather stations, publications, etc., are all dealt with under this section. Referring to "Special Investigations," the Report states that the Meteorological records obtained by the British Arctic Air Route Expedition to Greenland have been exhaustively analysed and discussed, and a full report is now in course of publication as a *Geophysical Memoir*.

The remainder of the report deals with Meteorology for the Services, Maritime Meteorology, Instruments, Observatories and Branch Meteorological offices, the International Polar Year, International Co-operation, Publications, Staff and, of course, Appendices.

Lightning and Aircraft

One of the "Professional Notes" just issued by the Meteorological Office is No. 66, *Lightning and Aircraft*, by G. C. Simpson, F.R.S. (H.M. Stationery Office, price 4d. net, postage extra).

There is always some electrical force in the earth's atmosphere, especially near the surface, and the first part of this paper describes the electrical effects which may be expected to accompany various types of weather. The generation of lightning and the ways in which the presence of aircraft may influence an electric discharge are then discussed, and lastly the dangers to, and the measures of protection that can be adopted for aeroplanes, airships and kite balloons, are considered separately. The general conclusion is that "on aeroplanes without aerials there is practically no danger to the personnel . . . the position, however, is much more serious if the machine has a trailing aerial . . . the most important thing therefore to be done when it is known that the plane is in a danger area or is about to enter a danger area is to withdraw the aerial."

Even though not actually struck by lightning, an aeroplane including metal parts not connected by conductors, may collect charges able to give unpleasant though not dangerous shocks.

No authentic case is on record of an aeroplane having been wrecked as the result of being struck by lightning, and since January, 1925, when the first report of a British aeroplane being struck by lightning was made, only ten cases have been reported. A short account of each of these occurrences is given in the first appendix and a second appendix contains the report of the committee which examined the problem of the protection of R.101 from the risks of lightning.

THE ROYAL AIR FORCE

Service Notes and News



Air Ministry Announcements

MIDDLE EAST COMMAND

Air Commodore C. T. Maclean, C.B., D.S.O., M.C., who is to become Air Officer Commanding the R.A.F. in the Middle East, with headquarters at Cairo, next month, has been granted the acting rank of Air Vice-Marshal (unpaid) from September 21.

CRANWELL CADETSHIPS FOR HALTON APPRENTICES

Aircraft Apprentices V. C. Darling, J. R. Fishwick, and P. E. Warcup from No. 1 School of Technical Training (Apprentices), Halton, have been selected for cadetships at the Royal Air Force College, Cranwell, on the result of examinations held on completion of their three years' training as aircraft apprentices.

The "Lord Wakefield" Scholarships, valued at £75 each, have been awarded to Flight Cadet J. R. Fishwick and to Flight Cadet J. H. Humphris (on the result of the recent competitive examination for entry into the Royal Air Force College).

Flight Cadet V. C. Darling comes from London; Flight Cadet J. R. Fishwick from Great Crosby, Liverpool; Flight Cadet J. H. Humphris from Charlton Kings, Nr. Cheltenham; and Flight Cadet P. E. Warcup from Grange, West Kirby, Cheshire.

PRIZE CADETSHIPS AT CRANWELL

The Air Council have awarded Prize Cadetships to the following successful candidates at the examination held in June last for entry into the Royal Air Force College, Cranwell: D. A. Kerr, Dartford Grammar School; R. P. M. Gibbs, Oundle School; W. I. C. Inness, Richmond School, Yorks; C. R. Blount, Malvern College; J. B. Tait, Wellingborough School; and A. M. K. Phillips, Wellington College.

OFFICERS FROM UNIVERSITY SQUADRONS

A course for officers coming from the Oxford and Cambridge University Air Squadrons is being started at Cranwell in the present term and will last until the end of February, 1935.

LONG SERVICE AND GOOD CONDUCT MEDALS

The Long Service and Good Conduct Medal has been awarded to the undermentioned airmen:—W.O. Cannock, W. M. E.; W.O.2 Ford, E. C.; S.M.2 Kinna, T. J.; W.O.'s McDiarmid, P., Mylam, R. A., Robbins, E. H., and Salt, G. W.; F./Sgts. Cargill, W. R., Dawson, S. G., Frost, W. R., Gammack, D. J., Harvey, C., Knight, R. W., Lazell, J., Lucas, S. G., Muir, J. P., Murphy, T., Parsons, C. L., Walker, G. E., and White, E. J.; Sgts. Allen, W., Atkin, J., Bakewell, A. E., Ball, C. V., Banwell, G. E., Bennett, A. T., Bishop, A. E., Blundell, H. W. R., Cooper, F. J., Cracknell, F. G., Hill, G. C., Matthews, E. W., Mitchell, S. E., Orchard, W. H., Osborne, J. S., Taylor, C. E. S., and Young, F. G.; Cpls. Abbess, S. G., Bradbury, A., and Cox, A. E.; Cpl./A./Sgt. Devlin, E. R.; Cpls. Good, J. D., and Martin, J.; Cpl./A./Sgt. Montague, H. J.; Cpls. Niven, J., Parmiter, W. H., and Shillito, C. H.; L.A.C.'s Fildes, E. E., Heathcote, R. S., and Hobbs, J. T.

STATION ENGINEERS

A new paragraph has been added to chapter III (general instructions for officers) of the King's Regulations and Air Council Instructions, which provides that the senior officer posted to a station for engineer-specialist duties will be known as the station engineer officer.

He will advise the C.O. of the station on engineering questions relating to airframes, aero engines, technical equipment not appropriate to other specialist officers, and, where necessary, mechanical transport and marine craft. He will also be responsible for technical administration in relation to engineering questions and will co-operate with the station education officer to assist airmen of the appropriate trades to reclassify or remuster, and to ensure that these and other

airmen are given opportunities of maintaining their skill. While he will be responsible for the station workshops and the transport and marine craft, the detailed control of these sections will normally be delegated to the warrant officer engineer or senior N.C.O. of the appropriate trade.

COMRADES OF THE ROYAL AIR FORCES ASSOCIATION

The fourth annual reunion dinner of the above-mentioned Association will be held at the Thames House Restaurant, Millbank, S.W.1, on Saturday, November 24, 1934. Tickets, 3s. 6d. each. Dress; lounge suits. Applications, accompanied by remittance, may be addressed to branch secretaries or to the honorary general secretary:—

Flight Lieutenant C. E. Cullen, R.A.F. (retired),
Azara, Station Estate, Taplow, Bucks.

OVERLOADING OF AIRCRAFT

An amendment to the King's Regulations provides that the C.O. of a flying unit will ensure that the weight shown in the weight-sheet summary for the type of aircraft as the maximum permissible for all forms of flying is not exceeded without the sanction of the Air or other officer commanding.

FOREIGN OFFICERS AT HAWKINGE

Lt. Afkhami, of the Persian Air Force, was attached to No. 25 (Fighter) Squadron, Hawkinge, Kent, as from September 13, 1934, to September 21, 1934, in order to study the organisation of and work carried out by the unit.

Major Januskevicius of the Lithuanian Air Force, completed his attachment to the Central Flying School, Wittering, Northamptonshire, on September 22, and has been attached to No. 25 (Fighter) Squadron, Hawkinge, Kent, as from September 24 for a period of fourteen days.

PERMANENT COMMISSIONS

The following short-service flying officers have been accorded permission to sit for the examination to be held on November 6 and 7 for permanent commissions in the general duties branch:—

AIR DEFENCE OF GREAT BRITAIN.—E. M. Donaldson, J. W. Donaldson, J. Grandy, R. H. Hobbs, S. Keane, R. N. McKern, G. A. L. Manton, A. C. Martin, J. D. Miller, J. K. Quill, J. Ramsden, D. W. Reid, R. C. Reynell, Q. W. A. Ross, S. E. R. Shepard, F. W. C. Shute, L. C. Slee, and A. W. Sweeney.

INLAND AREA.—F. W. Dixon Wright, D. M. Somerville, A. P. S. Wills, and J. M. Warfield.

COASTAL AREA.—J. G. Cardale, A. M. Carey, A. W. M. Finny, W. J. Hickey, J. W. A. Hunnard, B. S. Nicholl, J. R. Talbot, and J. O. Willis.

IRAQ.—T. C. Chambers, J. H. A. Chapman, A. D. Grace, W. L. Houlbrook, and C. C. McMullen.

MIDDLE EAST.—P. Bathurst, W. J. F. Bull, K. F. Ferguson, H. R. Graham, M. Hare, and A. A. Saw.

MEDITERRANEAN.—J. Goodhart and J. C. Sisson.

FAR EAST.—F. S. Gardner, D. A. Gibson, W. P. Harvey, R. S. Ryan, E. A. Springall, J. F. Stephens, A. G. F. Stewart, and L. F. J. Taylor.

INDIA.—C. N. Carpenter, M. H. Dwyer, P. H. Hamley, H. V. Horner, T. F. U. Lang, C. E. S. Lockett, R. Sorel-Cameron, and G. P. Woodhouse.

EXPLOSIVES COURSE

Flt. Lt. C. B. Turner (R.C.A.F.), having successfully completed the Explosives Course held at No. 2 Stores (Ammunition) Depot, Altrincham, which terminated on June 29, 1934, is granted the symbol "X."

R.A.F. FENCING UNION

The undermentioned officer took over the duties of the honorary secretary of the R.A.F. Fencing Union with effect from September 8, 1934:—

Flt. Lt. A. H. Simmonds,
R.A.F. School of Physical Training,
Uxbridge, Middlesex.

ROYAL AIR FORCE GAZETTE

London Gazette, September 25
General Duties Branch

The follg. are granted short service commissions as Acting Pilot Officers on probation with effect from and with seny. of September 14:—J. Addison, T. G. W. Appleby, G. B. M. Bell, E. G. Campbell-Voullaire, B. G. Carroll, W. E. Casley, G. F. Chater, W. C. A. Church, R. M. Coad, A. N. Cole, W. I. Collett, S. E. F. Curry, J. A. Dimalow, A. S. Downes, K. N. M. Eyres, G. P. Flew, C. E. E. Florigny, R. G. Forshaw, W. Foulsham, B. S. Francis, G. D. Garvin, K. C. Gill, J. N. Glover, G. E. Harrison, F. A. Holmes, T. B. Hunter, H. J. Irens, M. J. Keating, F. J. Oakley Lasbrey, I. E. Lloyd-Jones, W. A. L. Locker, D. C. R. Macdonald, J. P. Marriott, K. J. Mellor, J. Mercer, J. C. Millar, C. H. Mitchell, E. T. T. Nelson, W. M. Norman, V. R. Oats, H. M. Pinfold, W. O. Pridham, J. J. Raine, K. J. Rampling, R. P. Russ, B. Samson, D. G. Scott, R. F. See, D. C. Smith, R. N. Smith, L. J. Stickley, W. E. Surplice, C. N. Swann, T. G. Tideman, T. M. Tinker, J. B. Voyce, D. Walker, W. G. Wells, R. P. Widdowson, C. A. Wood, T. B. Yule.

Lt. C. I. A. Jackson (Royal Tank Corps) is granted a temporary commission as Flying Officer with effect from September 1, and with seny. of September 1, 1930; Air Commodore C. T. Maclean, C.B., D.S.O., M.C., is granted the acting rank of Air Vice-Marshal (unpaid) with effect from September 21; F/O. G. P. Marvin is promoted to the rank of Flt. Lt. (September 12); P/O. E. J. Palmer is promoted to the rank of Flying Officer (August 21); Flt. Lt. S. H. Hardy is placed on the half-pay list, Scale A, from September 19 to 27 inclusive; Flt. Lt. J. E. Buckland is placed on the retired list (September 25); F/O. L. F. H. Orr is transferred to

the Reserve, class A (April 20) (substituted for the notification in the Gazette of April 24); Lt.-Comdr. R. C. Clavell, O.B.E., R.N., Sqd. Ldr., R.A.F., relinquishes his temporary commission on ceasing to be seconded to the R.A.F. (September 4); F/O. M. E. C. Smart (Lt., The Welch Regiment) relinquishes his temporary commission on return to Army duty (August 31).

Medical Branch

F/O. G. Gilchrist, M.B., B.S., is promoted to the rank of Flt. Lt. with effect from September 4 and with seny. of May 1; Flt. Lt. (Hon. Wing. Com.) J. Valerie, O.B.E., M.R.C.S., L.R.C.P., relinquishes his temporary commission on completion of service and is permitted to retain the honorary rank of Wing Com. (September 3).

ROYAL AIR FORCE RESERVE

Reserve of Air Force Officers
General Duties Branch

M. R. Macarthur is granted a commission as Pilot Officer on probation in class AA(i) (September 1); F/O. F. E. Cowlrick is transferred from class AA(ii) to class C (September 2).

The follg. Flying Officers are transferred from class C to class AA(ii):—N. M. Hone (August 17); J. M. H. Hoare (September 7).

The notification in the Gazette of September 20, 1932, concerning F/O. L. H. Ross is cancelled.

AUXILIARY AIR FORCE

General Duties Branch

No. 600 (CITY OF LONDON) (FIGHTER) SQUADRON.—F/O. I. R. Campbell-Orde is promoted to the rank of Flt. Lt. (July 18).

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified:—

General Duties Branch

Wing Commander.—E. B. Rice, to No. 22 Group Headquarters, South Farnborough, 17.9.34. For Equipment (Engineer) Staff duties vice Wing Com. J. C. P. Wood.

Squadron Leader.—W. F. Dickson, D.S.O., O.B.E., A.F.C., to Headquarters, Western Area, Andover, 19.9.34. For Air Staff duties (temporarily) vice Sqd. Ldr. E. A. Beulah.

Flight Lieutenants.—R. L. R. Atcherley, to Experimental Section, Royal Aircraft Establishment, South Farnborough, 17.9.34. E. C. Delamain, M.C., to School of Photography, South Farnborough, 17.9.34. W. H. Jones, to No. 18 (B) Squadron, Upper Heyford, 18.9.34. M. C. Dick, A.F.C., to H.M.S. Hermes, 20.9.34. O. R. Pigott, to No. 35 (B) Squadron, Bircham Newton, 20.9.34. C. E. Williamson-Jones, to No. 209 (F.B.) Squadron, Mount Batten, 17.9.34.

Flying Officers.—F. B. H. Hayward, to Air Armament School, Eastchurch, 6.9.34. S. E. MacKenzie, to No. 65 (F) Squadron, Hornchurch, 15.9.34. A. W. Vincent, to Air Armament School, Eastchurch, 6.9.34. J. R. Talbot, to No. 811 (F.T.B.) Squadron, Gosport, 20.9.34.

Pilot Officers.—A. F. Bandidt, to No. 23 (F) Squadron, Biggin Hill,

14.9.34. O. H. D. Blomfield, to No. 15 (B) Squadron, Abingdon, 14.9.34. J. W. McGuire, to No. 3 (F) Squadron, Kenley, 14.9.34. K. J. McKay, to No. 142 (B) Squadron, Netheravon, 14.9.34. W. D. Disbrey, to No. 823 (F.S.R.) Squadron, Donibristle, 18.9.34. G. E. Peacock, to No. 823 (F.S.R.) Squadron, Donibristle, 20.9.34.

Acting Pilot Officer.—P. S. Hutchinson, to No. 25 (F) Squadron, Hawkinge, 9.9.34.

Stores Branch

Flight Lieutenant.—H. M. S. Dawes, to Administrative Wing, Halton, 20.9.34.

Accountant Branch

Flight Lieutenant.—K. A. Jackman, to Administrative Wing, Halton, 17.9.34.

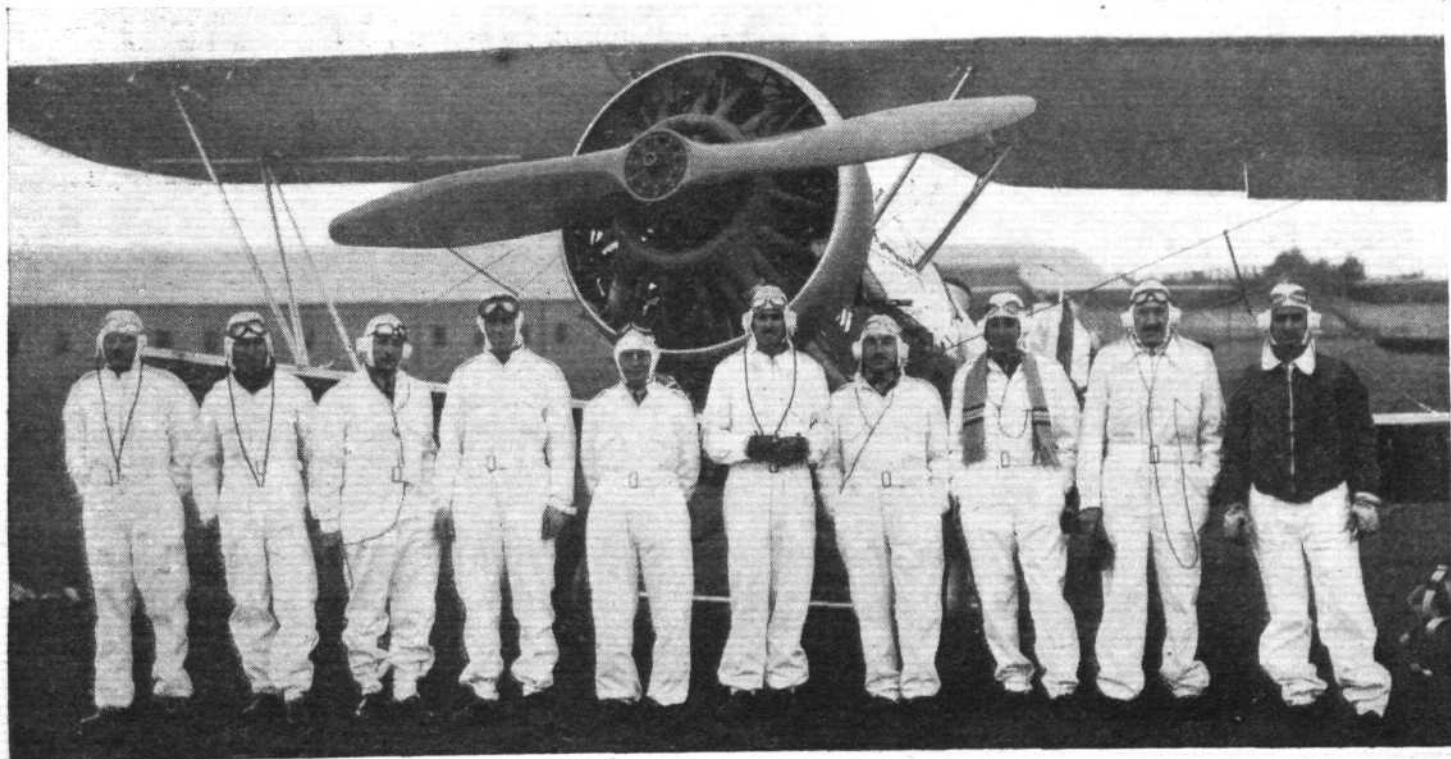
Medical Branch

Flight Lieutenants.—P. J. McNally, to Aeroplane and Armament Experimental Establishment, Martlesham Heath, 22.9.34. J. C. Neely, to Central Medical Establishment, 22.9.34.

NAVAL APPOINTMENTS

The following appointments were made by the Admiralty:—

Lt.-Cprs. (Flt. Lts., R.A.F.).—R. A. PEYTON, to Barham, for 444 F.S.R. Flt., in command; and H. C. RANALD, to Valiant, for 444 F.S.R. Flt. (at earliest convenient opportunity).



IRAQI OFFICERS: A group of pilots and observers who are flying the "Audax" ("Pegasus") machines from Lympe out to Iraq. (Flight Photo.)

AERONAUTICAL ENGINEERING TRAINING

Some Brief Particulars of Three Training Centres Now Available for Students Who Desire to Enter the Profession of Aeronautical Engineering

IMPERIAL COLLEGE OF SCIENCE

THE aeronautical section of the Imperial College of Science and Technology, South Kensington, London, S.W.17, was established in 1920-21 in part to give effect to the scheme proposed by the Committee on Education and Research in Aeronautics in their Report of December 12, 1919—that "The Imperial College should become the Central School for advanced study in Aeronautical Science."

The school is in the main a post-graduate one, and students are expected to have passed through a systematic training in Physics, or one of the branches of Engineering, preferably mechanical, including a fairly high standard in Mathematics. They should have graduated A.C.G.I., A.R.C.S., or B.Sc., or have attained a recognised equivalent standard.

Laboratory equipment available for students in either their first or second years includes a 4ft. x 5ft. N.P.L. type rectangular wind tunnel, in which special attachments have been provided to simplify and expedite observations of velocity and direction of air flow. A new tunnel of the open-jet type is also available. For the calibration of instruments at low speeds a small whirling arm has been built. A water tank, 12ft. long, 1.5ft. deep, and 1ft. wide, is used for observing the detail flow round objects moved through it, and an electrical tank has been built by Prof. G. I. Taylor, F.R.S., for the purpose of investigating the mathematics of the flow of fluid at high speeds where the effects of compressibility are important.

There is a good collection of models and aircraft constructional details for lecture and demonstration purposes, while use is also made of the collection of models in the aeronautical section of the Science Museum. Visits to works are arranged for students.

The following is a syllabus of the course:—

Aerodynamics (Prof. L. Bairstow).—Fluid motion. Steady motion of aircraft. General treatment of design data. Air-screw theory. Prediction of aircraft performance. Stability and control.

Aircraft Design and Drawing (Prof. Bairstow and Assistant Prof. E. T. Hill).—A typical machine is divided up into a number of components, and the design of individual parts discussed from the point of view of the use of particular materials, structural strength, ease of manufacture, etc.

Materials of Aircraft and Aero Engine Construction (Assistant Prof. Hill).—Material used from the designer's and constructor's point of view. Mechanical testing of materials. Protection of materials. B.S.I. and D.T.D. specifications.

Aircraft Structures (Assistant Prof. Hill and Dr. H. Roxbee Cox).—Aeroplanes. Loads on structure in flight; load factor: factor of safety. Design of wing and tail surfaces. Strength of wing structures. Airships. Laboratory and Drawing Office.

Engine Design (Lectureship vacant).—Essential features of a heat cycle. Engine accessories. Effect of altitude. Supercharging. Lines of future development; the injection engine.

Air Navigation and Aircraft Instruments (Mr. A. P. Rowe).—Principles of map projection; dead-reckoning navigation; aircraft magnetic compass design and installation; airspeed indicators and altimeters; drift direction finding. Navigation by astronomical observations. Wireless direction finding. Fog and night-flying, etc. Preceded by a special course of twelve lectures on Meteorology by the Professor of Meteorology.

THE NORTHAMPTON POLYTECHNIC

SPECIAL courses in Aeronautical Engineering are available to Students at the Northampton Polytechnic Institute, St. John Street, London, E.C.1. The Session for 1934-5 opened on October 1 (entrance examinations on September 25 and 26), and, in addition to the normal four-year courses, arrangements are made for alternative courses occupying three years. The courses organised in relation to the various branches of Engineering are identical for the first two years, so that it is not until the student has passed through his first works period following the second year of his course that he is required to make the choice as to which special branch of engineering he proposes to follow. During the third and fourth years, courses

are specialised in relation to the branch of engineering concerned—aeronautical engineering, for example.

The conditions for admission are that students should be at least sixteen years of age and should have had a suitable secondary school education or the equivalent. In order to ensure a standard of attainment on admission that will enable them to make satisfactory progress in their studies, students are required to pass an entrance examination, unless they have previously passed an approved general school or equivalent examination. Two entrance examinations are held during the year, in July and September.

Briefly, the Syllabus for the full four-year University courses is as follows:—

First year (September-June): Mathematics, Mechanics, Physics, Engineering Drawing and Engineering Workshop (six weeks during July-September being spent in Engineering Workshops).

Second year (September-Easter): Mathematics, Chemistry, Strength of Materials, Theory of Machines, Heat Engines and Electrical Engineering (Easter-September spent in the works of commercial engineering firms).

Third year (September-Easter): Mathematics, Hydraulics, Structures Exercises, Strength of Materials, Engineering Drawing and Design, Aerodynamics, Aero Design, Structural Drawing and Design, Electrical Engineering, etc. (Easter-September, Workshops).

Fourth year (September-June): Mathematics, Hydraulics, Aeronautics, Structures, Strength of Materials, Theory of Machines, Aeronautical Drawing and Design, Industrial Administration.

An extensive programme of evening courses is also organised in order to enable students to obtain suitable systematic instruction in the basic principles underlying the theory and practice of the various branches of engineering work, including aeronautical engineering. The courses usually involve attendance on three evenings a week, and extend over a period of years. Normally, students should be over seventeen years of age on admission, and enrolment of students may be made 6.30 p.m. to 9.30 p.m. on each evening (except Saturday) of the week commencing September 17.

The Session 1934-5 commences on September 24, and the Syllabus, briefly, is as follows:—

First year: Mathematics, Engineering Science (Heat and Mechanics), Engineering and Aeronautical Drawing.

Second year: Mathematics, Aeronautics, Applied Mechanics and Heat Engines.

Third year: Mathematics, Applied Mechanics and Aeronautical Design.

Fourth year: Mathematics, Materials, Aeronautics (Airscrews and Aero Engines) and Aero Design.

Fifth year: Materials, Aeronautics, Aeronautical Design and Mathematics (Optional).

AIRSPEED AERONAUTICAL ENGINEERING SCHOOL

AIRSPEED (1934) Ltd., of Portsmouth, has just instituted a course of aeronautical training. The project of the Airspeed School is to provide thorough technical and vocational training in the aeronautical industry for young men of good education as engineers, constructors and designers, as well as the necessary sales, supply and service, and operational organisations. It will be apparent that no matter in which of these spheres the student desires to enter, the fundamental basis of any training must include actual practical experience in aeronautical engineering. Provision has, therefore, been made to offer the student the choice of three careers.

After the initial training period of eighteen months in the company's factory under instruction, and on advancement assisting in the actual production of the company's output, the student will be instructed in the Advanced Course in the particular direction he wishes to pursue. The careers open to the student are:—(1) Advanced Aeronautical Engineering. (2) Aircraft Sales, Supply and Service. (3) Aircraft Operational Organisation. In the first the student will remain in

the company's factory until completion of the three years' course. In the second the student will, after an initial training in the company's office, join the sales, supply and service organisation of the company in England and/or overseas until the completion of the three years' course. In the last the student will be instructed in aerodrome management and development, traffic management, etc., with operating aviation lines in England or overseas, subject to the exigencies of the company.

Students are accepted from the age of seventeen years, and will conform to the factory's normal working hours (to which they must rigidly adhere). During the whole period students will attend lectures, and, during the winter session, attend evening classes under the supervision of the Board of Education. The lectures during the day will be based on the actual practical work of the daily syllabus. The evening classes

will include the following subjects:—Aëromaths and Mechanics; Aircraft Drawing and Detail Design; Aerodynamics and Aircraft Performances; Aircraft and Engine Construction; Theory of Flight. During the course the student will have passes through the following departments: Wood Mill and Wood Inspection Department; Carpenters' Shop; Fitters' Shop; Copper-smiths and Tinsmiths; Dope and Fabric; Erecting Shop; Engine Shop; Installation (engine); Rigging Shop; Aircraft Inspection; Repair Department; Drawing Office; Costing; Planning; Aerodrome (Flight Sheds).

While flying is not incorporated in the course, arrangements may be made with the Portsmouth Aero Club (adjacent to the factory) for the necessary flying instruction for those who wish to take advantage of this asset.

Further particulars may be obtained from Airspeed (1934) Ltd., the Airport, Portsmouth.

THE GORDON BENNETT BALLOON RACE

Poland Wins the Cup for the Second Year in Succession

THIS year's balloon contest for the Gordon Bennett Cup—the oldest annual aviation event in the world—was held in Poland, this country winning last year's contest from America. There were eighteen entries for the race, including three each from France, Germany and Poland, two each from Belgium, Switzerland and U.S.A., and one each from Czechoslovakia, Italy and Spain. Actually there were sixteen starters from the Warsaw aerodrome on September 23; one of the French balloons, incidentally, made a premature start without its gondola!

Competitors had a choice of either ascending above 4,000 ft., where an easterly wind was blowing, or remaining at a lower altitude and following a north-easterly course towards Moscow. Most of the pilots chose the latter, and several balloons were seen above Moscow next day. All the balloons were equipped with wireless receivers, and weather reports were sent out to them during the race from Polish meteorological stations. The balloons were not fitted with wireless transmitters, but messages could be dropped or sent by carrier pigeons.

The first balloon to land was the *Bratislava* (Czechoslovakia), which descended the same evening near Kybartai, in Lithuania, while two German balloons landed next morning in Esthonia and the American balloon *Buffalo* landed in Russia on Lake Chudskya, near Godoff.

Capt. Hynek with Lt. Pomaski, in the Polish balloon *Kosciuszko* landed in Finland, 807 miles from Warsaw, and was announced as the winner. Second place went to *Polonia*, also a Polish balloon, which landed at Savonlinna, Finland,



GORDON BENNETT BALLOON RACE: Ready to start from Warsaw. The winning *Kosciuszko* is in the foreground.

795 miles from Warsaw, while third place also went to a Polish balloon, the *Warszawa*. As reported last week, the *Polonia* ripped its envelope above a Finnish lake, into which it fell, the pilots having to swim for their lives.

The Belgian balloon, *Belgica*, was placed fourth, and the second Belgian entry, *Bruxelles*, landed at Witebsk, in Russia.

It may be of interest to note that the Polish balloons employed a new method of impregnating the fabric of the envelope which has been introduced by Polish manufacturers.

Christening a "Comet"

The second De Havilland "Comet" to come out of the works was christened at Hatfield by Mrs. Linton, the wife of the Agent-General for Victoria, at Hatfield on Tuesday last. This machine is the one which has been entered by Mr. A. O. Edwards for the England-Australia air race, and it will be flown by C. W. A. Scott and T. Campbell Black. After Mrs. Linton had duly broken a bottle of champagne on the airscrew boss, the Agent-General himself, the Honourable Richard Linton, made a short speech in which he announced that Mr. Edwards had already left for Australia and that he would meet this machine on its arrival at Melbourne. Naturally he was hoping that it would be among the first to finish. The machine was not actually completed, and was not, therefore, flown on this occasion, but, after the ceremony, the visitors were shown over a similar machine already finished, by the two pilots. (Full details of the "Comet" were given in *Flight* of September 13, 1934.)

Royal Aero Club at Mildenhall

The start of the England-Australia Air Races will take place at Mildenhall Aerodrome at 6.30 a.m. on Saturday, October 20. The competing aircraft are required to assemble at Mildenhall not later than Sunday, October 14, 1934, where they will remain from that date until the start of the races. During the week aircraft will be weighed and will be carrying out various tests. Members will be admitted to the Royal Aero Club enclosure during the period October 14-20 free on presentation of their membership cards. Any guests accompanying members will be charged 5s. each. Motor cars will be charged 2s. each, and will be accommodated in the Royal Aero Club car park, which is in close proximity to the entrance of the aerodrome. No motor cars will be admitted to the Royal Aero Club enclosure on the aerodrome. Luncheons, teas, etc., will be obtainable in the club enclosure. Civil aircraft will not be permitted to land at Mildenhall Aerodrome during the period October 13-20.

COMMERCIAL AVIATION

— AIRLINES — AIRPORTS —

THE START OF THE "DIFFICULT SEASON"

Many of the internal lines are to be operated during the winter months, and the experiment, even if only partially successful, will provide interesting data for both pilots and traffic managers. Next year they may have better ground organisation

WITH a climate that is so proverbially erratic, in a country where the little hills appear to swell in wet weather and poke their heads through the rain clouds, and where the ground organisation is still so incomplete, no one would have been in the least surprised if all the internal services had shut down with a crash at the end of last month.

As it is, one finds that most of the companies are either carrying on for another month or definitely planning skeleton services to cover the entire winter season.

Railway Air Services, for instance, though putting the shutters up on their Liverpool-Birmingham-Plymouth and Birmingham-Cowes services, are carrying on with the London-Glasgow route until further notice—at least until the end of this month—with a slightly altered timetable. The north-bound "86" will, for the period of the extension at least, leave Croydon at 9.45 a.m., Castle Bromwich at 10.50 a.m., Barton at 11.50 a.m., Aldergrove at 1.50 p.m., and will arrive at Renfrew at 2.45 p.m. The return times remain as before—Renfrew 9 a.m., reaching Croydon at 2 p.m.

Wireless Arrangements

This line is fairly well furnished with D./F stations at Croydon, Barton (GEM), and Newtownards (GET), while pilots will be able to receive some assistance from the R.A.F. station at Abbotsinch, near Paisley; Renfrew has no radio. The Air Ministry, incidentally, has just published a *Notice to Airmen* giving information about the radio stations likely to be of use to the internal services, and a list of authorised points for map reference.

The Spartan Air Lines' London to Cowes service will, too, be continued for the time being, calling additionally at Southampton and making connections with the longer service. The pilots have radio help from Portsmouth (GEN), as well as from Croydon. Machines leave Croydon at 9.45 a.m. and 3.30 p.m., and leave Bembridge at 8.30 a.m. and 2.15 p.m. (This flying business may mean that travellers will actually learn to use the daylight hours *before* 9 a.m.!) On Sundays the service leaves Croydon and Bembridge at 9.40 a.m. and 3.40 p.m., respectively.

Mr. Edward Hillman is running his Belfast service "up" one day and "down" the next. In other words, his "Dragons" or "89's" leave Essex Airport on Tuesdays, Thursdays and Saturdays at 10 a.m., stopping at Speke and Ronaldsway, and arriving at Newtownards at 1.30 p.m. On Mondays, Wednesdays and Fridays the machines leave Newtownards at 12.30 p.m. and arrive at Stapleford Abbots at 4 p.m. His London-Paris service is run daily.

The tidal question makes Jersey Airways' timetable necessarily a complicated one, departures varying between 8.30 a.m. and 12.30 p.m., but one service is to be run each way every day. While crossing the Channel the pilots can keep in touch with Portsmouth (GEN) and report their position. This is, from the navigation point of view, one of the more difficult services, but the pilots have had a great deal of experience of the crossing, and the service has been in successful operation since last December. The Jersey-Paris service is being run at present on Mondays and Thursdays in each direction.

London Scottish and Provincial Airways are now carrying eighty passengers a week, though their Leeds-Nottingham-Heston and Paris service was only started during the summer. It is to be run daily each way, with an additional service to Heston and back. A "Courier" leaves Heston at 9.30 a.m., reaching Leeds (Sherburn) at 11.5 a.m.; at 11.20 a.m. the Paris machine leaves there, arriving at 3.20 p.m. Another

"Courier" leaves Paris at 9.30 a.m., arrives at Sherburn at 1.20 p.m., and leaves for Heston twenty minutes later. Special "twenty-four-hour cheap return" tickets are offered on Wednesdays and Saturdays.

Two-way wireless will eventually be installed in all the machines, and the company is making an application to have the wireless equipment at Hedon, Hull, shifted to Sherburn for the winter, since the K.L.M. service has been discontinued during the winter months.

The country west of Haldon is not the easiest in the world to fly over during bad weather, but Provincial Airways are carrying on with a daily service each way, leaving Plymouth at 9 a.m. for Croydon, and leaving Croydon again at 2 p.m. The journey normally takes a little over two hours.

All the "Dragons" are fitted with two-way wireless, but the pilots are flying rather into the unknown beyond Portsmouth, which is the last wireless equipped aerodrome on the run. But they should know every mile by now.

The P.S. and I.O.W.A. Portsmouth-Ryde "ferry" will be run at hour and two-hour intervals, as usual, though the later services are cut off as the days get shorter. The week-end service between Heston and Ryde will be run during October with one service each way on Friday, two on Saturday, one from Ryde on Sunday, and two each way on Monday morning. Special services are, incidentally, run at normal fares for parties of six or more on the Heston-Ryde run, and for parties of four or more on the "ferry" service.

In the North

Blackpool and West Coast Air Services, one of whose directors, incidentally, is Mr. Gordon P. Olley, are carrying on throughout the winter with a service each way, leaving Liverpool at 9.30 a.m., Blackpool (Squire's Gate) at 10 a.m., and returning again from the Isle of Man (Ronaldsway) at 2.15 p.m.

During October Highland Airways are continuing the Inverness-Kirkwall service, if only because they have a newspaper and mail contract until the end of the month. The Aberdeen part of the route was closed down at the end of last month, but will operate on a revised timetable on Tuesdays and Fridays during October, a machine leaving Kirkwall at 10 a.m., Wick at 10.30 a.m., and arriving at Aberdeen at 11.45 a.m. The return journey starts at 12.15 p.m., and the machine arrives at Kirkwall at 2 p.m. On Mondays and Saturdays the same machine will maintain a service to the Northern Orkneys.

Exactly what will happen after October remains to be seen, but the Kirkwall-Wick service will definitely be continued, as last year, throughout the winter.

After October 7 the Bristol to Bournemouth service of Norman Edgar (Western Airways), Ltd., will be discontinued until the spring, but the Cardiff-Bristol "ferry" will be operated twice daily in each direction. A machine leaves Cardiff at 11.15 a.m. and 3.15 p.m., and leaves Bristol (Whitchurch) at 10.45 a.m. and 2.45 p.m.

The Rochester-Southend hourly "shuttle" service is carrying on for the present, the first machines leaving Rochford and Rochester at 9 a.m. and the last at 6.30 p.m. Naturally, the shortening days means that the late services will be washed out one by one. This line is run, of course, by Short Bros. and Southend-on-Sea Flying Services, and a "Scion" and a "Fox Moth" are used.

On the whole, therefore it will be seen that almost all the internal operating companies are putting up some sort of show. It remains to be seen how the schedules can be held without taking risks in bad weather.

CROYDON

The Universality of Air Travel : Unannounced from Australia : The Fokker F.XXXVI : A Loud Speaker Needed

CONSIDERABLE satisfaction is felt about the way in which the passenger figures are keeping up so late in the year. There will be little difference between summer and winter schedules in a few years' time, and during this winter many services, usually stopped at the end of September, are being run until the end of October. Spring services, too, are arranged to start much earlier next year.

Last Monday two passengers on one of the morning machines were pointed out to me: La Conchita Supervia, the opera singer, and the Swedish Minister to Moscow and Persia. The point being the universality of air travel, for great names do not make news any longer, and there is less fuss made at Croydon, even of royalty, than at a railway station.

On Friday the big Fokker F.XXXVI landed at Croydon almost simultaneously with Mr. C. J. Melrose, who arrived all unannounced from Australia in 8 days 9 hours—an unofficial record. He and his aeroplane had their photograph taken alongside the Fokker, in which Mr. Melrose seemed greatly interested. The message giving his departure from Lyons, incidentally, reached Croydon after he had landed!

His was an extremely sound and useful flight, and he was refreshingly modest about it. He took careful notes of conditions on the aerodromes he used, and these, I am told, have been in great demand by England-Australia race pilots. There are very strong rumours that Capt. I. W. Smirnoff, one of the crack K.L.M. pilots, and holder of the K.L.M. Amsterdam-Batavia and the Batavia-Amsterdam records, is to fly one of the British "Comets" in the forthcoming race. If this is true, it simply shows how internationally we think in the flying business. Mr. Fokker himself came along in the F.XXXVI. He is as young as ever and was, as usual, eating little toffees and discussing revolutionary theories of aircraft design. The aeroplane has already been described, but what interested me were the opinions of "Jimmy" Youell, Capt. Hope, M. Bajac, of Air France, a well-known D.L.H. pilot and a Sabena pilot, all of whom handled the machine in the air.

Interesting, also, were the views of such experts as Major Brackley, Mr. Woolley-Dod, the managers of the various foreign companies, Mr. Hillman, and the Mollisons—to mention but a few. Sqd. Ldr. England, of Handley Page, was there, and a host of people from various manufacturing firms, as well as the Air Ministry and the R.A.F. There can be no doubt that the big Fokker impressed them. Incidentally, in order to oblige the photographers, the machine was flown low over the aerodrome several times—but what are regulations for if they cannot be broken with official sanction, and even with a control tower officer on board? On Saturday morning Lt. Col. Shelmerdine and Mr. Woods Humphrey inspected the machine.

On its inward journey the F.XXXVI took 1 hr. 30 min., and outward to Holland the time was 1 hr. 19 min. The machine is definitely fast. The K.L.M. Douglas should too, be visiting Croydon shortly.

Mr. Both, of K.L.M., inward bound to Croydon, reported a small vessel in distress on Friday, but nothing was found at the place indicated. He circled the vessel and described it as a mast and somewhat ragged sail visible above the water, but there was no sign of life.

It has been suggested that a loud speaker, human or otherwise, is badly needed in the Main Hall to announce the departure of aeroplanes to various destinations and to warn passengers to move to the tarmac. A lot of time is wasted by officials in shouting to their passengers, and owing to the curious acoustics of the hall it is usually necessary, after all, to shepherd the passengers in the manner of one herding geese. Mr. Joe Chamberlain, of Surrey Flying Services, Ltd., has been suggested, with his dulcet voice and persuasive manner.

A good and perfectly true story is told, incidentally, of Joe. When the big Fokker was being demonstrated he was looking for joy-ride customers in its vicinity. He tackled a tall stranger, who was almost persuaded to try a short flight. It was the Fokker works test pilot!

A. VIATOR.



FLYING TO BUSINESS : One of the Bellancas used on the New York-Long Island "shuttle-service," sitting on its 165-ton ramp and turntable in East River during the inauguration ceremony.

Commercial Aviation**HESTON***When Croydon is Q.B.I. : Flying the News : A Record School Month*

HESTON'S position outside the fog control zone makes it the ideal port of call in bad weather for machines Croydon-bound from the north when these are not fitted with radio. The custom of dropping in to Heston to get the Croydon weather has now been regularised. When Croydon is Q.B.I. Heston advises all machines that this is so by displaying two large yellow discs on the Control Tower, while a white panel (30ft. x 20ft.) by the wind indicator displays the letter "C" and two black bars—the former being permanent, the two bars being added when Q.B.I. is in force at Croydon.

London, Scottish and Provincial Airways announce their new times of arrival and departure as from October 1. The service is, as before, seven days a week, but the first morning departure from Leeds (Sherburn) will be 11.20 a.m. instead of 10 a.m., reaching Heston at 12.55 p.m., with corresponding alterations of times at Nottingham and Paris and from the respective hotels.

The part that flying plays in the news organisation of this country is not always recognised by the millions of readers who glance over their morning paper or snatch their evening

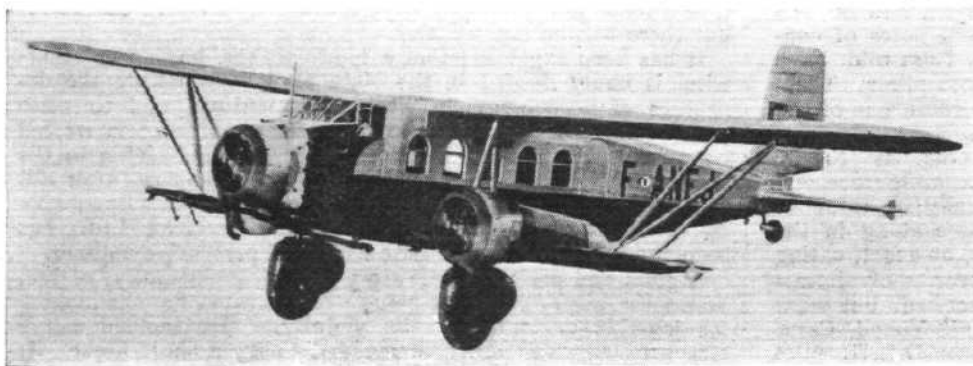
paper as they rush for their train at night. If something big has happened anywhere half a dozen Fleet Street motor cycle runners can usually be found round the tarmac waiting for photographs or films.

The Wrexham disaster kept us busy. Birketts alone had five machines up there on Press work, finally completing the job by relaying the films they had already brought from the north down to Southampton in time to catch the *Olympic*, sailing for the U.S.A., after they had been developed and printed in London.

Of the machines sent up for the launching of the giant Cunarder only two were able to get through the weather, one of them being Capt. Birkett himself, flying a "Puss Moth."

The Flying School are rejoicing in another record month. With three days to go they are 50 hours up on September, 1933.

Repeated and well-founded rumours that an Autogiro is joining the School fleet are being given substance by stories that Capt. Baker and Davy have been seen taking each other for flims at crack of dawn in one of the latest direct-control models.



HARDLY PRETTY, BUT—: The new three-engined Breguet 393 T. which carries six passengers at 137 m.p.h. on the Toulouse-Casablanca service.

Heston's Weather Reports

Owing to interference from a foreign radio station, all weather reports, forecasts and navigational warnings issued from Heston will, until further notice, be broadcast on a frequency of 253 kc/s (1,186 metres). Previously the frequency was 249.5 kc/s (1,203 metres).

New Australian Service

The Commonwealth Minister for Defence, Sir George Pearce, announces that tenders, closing on November 2, will be called for the operation of a subsidised weekly air service between Adelaide (South Australia) and Bourke (N.S.W.), a distance of 590 miles. Aircraft must accommodate at least four passengers, in addition to luggage and mails, and have a minimum cruising speed of 110 m.p.h.

The new service will link the South Australian capital with the Qantas Empire Airways route from Singapore. It will obviate the necessity for rail European air mails between Cootamundra (N.S.W.) and Melbourne, and will also serve the dried-fruit industry of Renmark and the mining district of Broken Hill.

The Qantas D.H.86

Mr. L. F. Brain is now on his way to Australia with the first of the special D.H.86's for Qantas Empire Airways.

This machine differs in certain details from the standard model. The nose has been redesigned to accommodate two pilots, with dual control and sitting side by side, and in front of them is a luggage compartment to carry 100lb., an arrangement which improves the weight distribution. Its maximum speed is 173 m.p.h., and its economical cruising speed is 144.5 m.p.h., the fuel consumption at the latter speed being 35 gallons an hour. Height can be maintained on any three engines at 14,000ft., or at 3,500ft. with only two engines in action.

When the machine left Croydon it was loaded to within 100lb. of its maximum, with a spare engine and various parts and with 191 gallons of fuel.

K.L.M. Regularity

Now that the K.L.M. summer service to the Netherlands Indies has been terminated, it is interesting to realise that the regularity has been 100 per cent. during the season. Not a single machine has been late, though one, piloted by Te Roller, was delayed at Rangoon, and was flown from Djask to Amsterdam (4,000 miles) in two days.

Improvements at Speke

Last week the Liverpool Corporation decided that Speke airport should be further developed at a cost of approximately £100,000, and the latest plans are being based, to some extent, on those of Hamburg's aerodrome.

There will be new control buildings, a hangar to house nine large aeroplanes—with space for another of the same size—car parks, and internal roads. The designs have been put forward by Mr. A. D. Jenkins, and these are intended to provide a maximum of ground space for aircraft with a minimum of frontage for the administrative buildings.

Nowadays, incidentally, Speke has a maximum run of well over a mile in one direction.

The Dublin-London Service

The Irish Free State Government has decided to establish a semi-official air service between Dublin and London. A company known as Air Fleet of Ireland, Ltd., is to be floated with a capital of £60,000, and it is believed that the company will be financed by the Industrial Credit Corporation, Dublin, a Government organisation.

It is stated that Colonel Charles F. Russell, former chief of the Free State Army Air Corps, will be the chairman of the company and some of the directors will be nominated by the Minister for Industry and Commerce. Through the directorate it is also hoped to link the organisation with the railways operating in the Free State with a view to establishing eventually a subsidiary somewhat similar to Railway Air Services in Great Britain.

Fokkers are expected to be used on the route, which will probably reach London via Liverpool, but no definite decision has yet been made.

(Other Commercial Aviation News appears on page 1025.)

BOOK REVIEWS

"The War in the Air," being the story of the part played in the Great War by the Royal Air Force. Vol. IV. By H. A. Jones. (Clarendon Press, Oxford. 17s. 6d.)

[Reviewed by Major F. A. de V. Robertson, V.D.]

THE more one reads of Major Jones' admirable story of the war in the air, the more deeply one becomes impressed with the difficulties of the air historian. Despite the appearance in the last few months of the war of a so-called Independent Air Force, which was under the orders of Marshal Foch, the rôle of the air units throughout was to act as an arm of either the Navy or the Army. Therefore, the air historian must give a fairly clear outline of the course of the operations on sea and land in which the aircraft had to take part. In doing so, the air historian must be careful not to trench upon the province of other official historians, and yet he must not be too concise or his own story would become meaningless. The main theme becomes the tactical use of aircraft to attain the objects of the admirals or generals down below. He must also give as much as possible of the histories of individual squadrons, many of which still exist, but tactically the wings and brigades of the R.A.F. were at the moment more important, and these no longer exist and the reader hardly cares to memorise them. The terms "Corps squadrons" and "Army squadrons" meant a great deal in those days, and now it requires an effort to remember what they did mean. Then there is the technical side of the history. The predominance in air fighting swayed backwards and forwards according to the success of the latest Sopwith, Fokker, R.A. Factory, "Albatros," etc., machine. Finally, as a sort of *bon bouche* to both author and reader, come the individual feats of the great heroes, Ball, McCudden, Mannock, and the rest. To hold the balance between all these aspects of the subject is a difficult task, and Major Jones tackles it with very good judgment. We should like rather more of the technical history, such as the points in favour of each when S.E.5a's fought Fokker Triplanes, but Major Jones is now giving us more of that than he did when he first began his task.

THE R.N.A.S.

Volume IV of the history covers a great deal of ground in 1917 and 1918. The first three chapters are devoted to the Royal Naval Air Service. A very clear account is given of how the use of aircraft with the Fleet developed until the complete carrier with flying decks came into being. It is interesting to note on page 8 that in August, 1915, Lt. G. R. A. Holmes, R.N.V.R., suggested re-shipping seaplanes by means of a trailing apron, much as is now done when the Dorniers are taken aboard the *Westfalen* in mid-Atlantic. The author goes on to deal with the development of the flying boat by Col. Porte, the use of gun turrets for flying off warships, kite balloons, airships, the war against the U-boats, and the operations from Dunkirk. The R.N.A.S. had many forms of activity, and this must add to the difficulties of writing its history, but it would be hard to improve on the clear record set down in these chapters.

MESSINES

In chapter 4 the author returns to the R.F.C. and the land war, starting with the battle of Messines in June, 1917. It was in the air fighting over this battle that Karl Schaefer, a German who had thirty victories to his credit, was shot down by a F.E.2d of No. 20 Squadron, piloted by Lt. H. L. Satchell with Sec.-Lt. T. A. M. S. Lewis as observer. The fight lasted fifteen minutes, and then a burst from the F.E. broke up the red "Albatros." It was also in this battle that Capt. Bishop, of No. 60 Squadron (Nieuport Scout), won the Victoria Cross. Tactically the battle was of interest because the infantry, in their victorious rush, feared to disclose their own positions to the enemy by displaying signals to the Corps aeroplanes which had been given the task of reporting progress to the Staff.

From victorious Messines the narrative turns to the dreary and bloody battles generally known as Passchendaele, about which Mr. Lloyd George has waxed so eloquent in his latest book, portions of which have appeared in the *Daily Telegraph*. In this battle, at any rate, it was far better to be in the R.F.C. than in the infantry. The airman was not much concerned with the quagmire below. Just before the attack began, the Army was no little perturbed by the order of the Cabinet to send two good fighter squadrons home to help in

meeting the German air raids by day. Major Jones remarks, "That a nation might be forced to sue for peace through an air offensive against its most important centres has been put forward as a post-war doctrine, and a study of the results of the (comparatively) slight German daylight raids in 1917 will lend support to this teaching." The support which it lends is slight, for there was no thought in any influential quarter of suing for peace. Rather the lesson is that a sharp division must be made between the aircraft allotted for Home Defence and those allotted for work with the Army. It was intolerable that one should be able to draw on the other at a moment when the needs of the Army were paramount.

It was during these battles that Werner Voss was killed. Capt. McCudden, of No. 56 Squadron (S.E.5a), was in the fight with a flight of his squadron. Voss, who was in a red-nosed Fokker triplane, fought seven British machines single-handed for some ten minutes with magnificent courage and skill, and was finally killed by Sec.-Lt. A. P. F. Rhys-Davids, of No. 56 Squadron. At that time No. 56 Squadron was one of our best fighting units. Before he joined it, McCudden visited the squadron and wrote, "There was a wonderful spirit in this squadron, which was entirely different from any squadron with which I had yet come in contact." Ball had also been in that squadron, and many other great fighters. The squadron is now stationed at North Weald, and is equipped with "Bulldogs." It was the first squadron to be equipped with the S.E.5a, in April, 1917, just before the Passchendaele attack. During the battle, in July, 1917, "Camels" were issued first to No. 70 Squadron, and then to No. 45 Squadron. Capt. Norman Macmillan was in the latter squadron, and he has described the delight of the pilots on discarding the out-of-date Sopwith two-seaters and getting a machine which would give them a fair chance against the German fighters.

CAMBRAI

Cambrai, in November-December, 1917, is the next battle described. It was the first time that tanks were used in numbers so as to surprise the Germans, and effect a break-through on a narrow front. As sufficient reserves were not available to develop the advantage, the final result was loss rather than gain. In this battle the aircraft were hampered by bad visibility, and some essential information about the difficulties of our infantry was not passed back to our guns. So far as the air was concerned, the chief feature of this battle was the development of low-flying attacks by aircraft on the German ground troops. The casualties to the fighters engaged in this were so high that it meant that a squadron had to be replaced entirely in pilots and machines every four days. The moral effect on the German infantry was considerable, but the concrete results were not so great. Troops advancing to the attack were delayed, but never entirely stopped. It appears that such tactics are only excusable if the enemy aircraft is not active, and also if provision is made at the same time for continuous observation for the artillery. Artillery can destroy enemy troops far more effectually than is possible by the light bombs and plunging machine-gun fire of fighter aircraft. Air armaments do not include anything to take the place of shrapnel.

DEATH OF VON RICHTHOFFEN

The last chapters of this volume deal with the German offensive in the spring of 1918, first on the Somme and then at Bethune. In the hurried retreat numbers of our aircraft had to be burnt as the squadrons moved back, but they were speedily replaced. What was more serious was that the retreating artillery often lost their wireless equipment, and so did not reply when the Corps aeroplanes called for fire on the masses of German infantry which they could see advancing. This lack of co-operation between air and guns probably helped the Germans far more than the low-flying fighters damaged them.

It was during this retreat that von Richthofen was killed in a great dog-fight. Major Jones gives a very full and careful account of all the circumstances, examines the claims put forward by machine-gunners on the ground, and concludes, "after a careful examination of these and of all other reports, the official decision was that Richthofen was killed by a bullet from the machine-guns of Capt. A. R. Brown." That should end the controversy.

The rôle of the Air Force in defence was a new study in 1918, and its duties were laid down as "(a) co-operation with our artillery, the activity of which will probably be increased at

this stage; (b) extensive bombing attacks to hinder the enemy's preparations, inflict casualties upon his troops, and disturb their rest; and (c) an energetic offensive against the enemy's aviation in order to permit of (a) and (b).

When Marshal Foch assumed supreme command, he issued instructions which showed the strategic mind applied to the use of aircraft. He enjoined concentration in bombing, instead of sporadic methods, "on such few of the most important of the enemy's railway junctions as it may be possible to put out of action with certainty and to keep out of action." He also envisaged co-operation between the British and French air units, as previously the Germans had often achieved numerical superiority at the critical point when they were inferior to the joint air strength of the combined Allies. It is much to be regretted that such principles had not been put into operation at an early stage in the war.

"International Caterpillar Club, 1925-1933." (Copyright by Irving Air Chute of Great Britain, Ltd. Printed by T. Dunnill Sykes, Ltd., Victory Press, Letchworth, Herts.)

THE thought of coming down to earth in a parachute makes most men shudder, and one opens this book with the expectation that one's sleep will be disturbed at nights by thoughts of the horrors to be found inside it. The result of reading the records is, however, quite the opposite. It contains accounts of 174 cases in which lives have been saved by using Irving parachutes, and in most cases the men who have thus qualified for membership of the International Caterpillar

Club have written some account of their experiences and sensations. Very few indeed seem to have felt any sensation of horror at getting out of the aeroplane and jumping. They knew that the machine would crash and that they would be killed unless they jumped, and their chief anxiety was to get free. The Irving parachute invariably opened, and then all their anxieties were over. They mostly enjoyed the calm descent to earth, and very seldom did they suffer any harm in the landing. Even inexperienced jumpers, and they were nearly all inexperienced, found that they could guide the parachute to a level space by pulling the supports on one side or the other. Some had special experiences, such as Major A. H. Gikleson, of the U.S. Army, who jumped from a height of only about 125 feet, and landed safely immediately after the parachute had opened. Col. Lindbergh has made four drops, once when he was a cadet at the Army school of flying and collided with another machine when both (S.E.5's) were practising attacking a D.H. Even as a youngster he was cool, and wrote "the wreckage was falling nearly straight down and for some time I fell in line with its path and only slightly to one side. Fearing the wreckage might fall on me, I did not pull the rip-cord until I had dropped several hundred feet and into the clouds. . . . The parachute functioned perfectly. . . . Although the impact of landing was too great for me to remain standing, I was not injured in any way." The book grows quite fascinating as one dives into it, and one realises what a great boon the trustworthy parachute has conferred upon airmen.

F. A. DE V. R.

CORRESPONDENCE

The Editor does not hold himself responsible for opinions expressed by correspondents. The names and addresses of the writers, not necessarily for publication, must in all cases accompany letters intended for insertion in these columns.

FOG LANDINGS.

[2961] Referring to No. 1,342 of the 13th September of *Flight*, and particularly to the article on page 961 "Before dawn."

In this article the attention of the reader is drawn to a system for "fog approaches and landings," and the reader may infer from the article that this is something quite new.

It will surely be interesting to your readers to know that this system, called "ZZ", has been developed by my company during the year 1930, and my company's pilots have had the first instructions in this kind of landing while flying blind, during the winter 1930-31. It is not confined solely to freight-carrying aeroplanes, but is in use also for aeroplanes operated on regularly scheduled passenger air services.

To my company's knowledge the same system was at a later date adopted also for use at Le Bourget Aerodrome.

Deutsche Luft Hansa A.G., Croydon.

W. E. Schmidt-Rex, London Manager.

ARE AILERONS NECESSARY?

[2962] Since many years very interested in the design of cheap and light aeroplanes, I found in your issue of September 20 some illuminating remarks concerning simplified fool-proof control of such aeroplanes.

Regarding the question of lateral control, it may be of some interest for the younger generation of your readers to hear that quite a lot of pre-War aeroplanes have flown without any lateral control, besides the pioneer aeroplanes of Messrs. Voisin and Mr. Levavasseur fame (the former using the principle of the Hargrave box-kite).

The Fokker Spinni (= spider) aeroplanes of about 1912, real low-wing monoplanes characterised by a pronounced dihedral mixed up with a sweep-back of the square-edged wings, possessed neither any wing warping feature nor ailerons. Like the modern Mignet aeroplane, they also had no foot control, the wheel of the control column being coupled with the rudder. These Fokker monoplanes, with engines from 60 to about 100 h.p., showed at that time a good behaviour in the air. Mr. Fokker and his pupils doing for some time the steepest turns ever seen at Johannistral, but seem to have suffered from bad starting and landing qualities in a cross wind. Therefore the German flying corps made Mr. Fokker give up the further development of this interesting type.

The Elrich "Taube" monoplane, of which more than two hundred have been built in the time from 1911 till 1915 by several German aircraft firms, showed a sort of lateral control consisting in warping of the rear and wing tips. But every "Taube" pilot of this time will confirm to that this somewhat inefficient lateral control never had to be used.

This Elrich "Taube" monoplane had a curious wing form

designed, following the well-known principle of the "Zanonia makrocorpia" grain of seed, the excellent flying qualities of which being detected by Professor Ahlborn.

There should be no difficulty to design a laterally inherent stable aeroplane needing no sort of lateral control at all. Small aeroplanes of that kind may certainly do well in modern sport-flying, the flying possibilities being restricted to calm weather flying.

One has but to realise the flying experience collected with the pre-War aeroplanes mentioned before, in the light of modern aero-technical knowledge.

Amsterdam.

ALFRED RICHARD WEYL.

FLYING FOR ALL

[2963] Fortune knocks at the door and we hear it not. A small, unnoticed event changes the whole course of our lives until some time later our memory carries us back and we see the road over which it took us. In 1825 the first train steamed out of Darlington and they jeered. In 1914 aeroplanes were a wonder and their present development unbelievable—and these soliloquies summoned up by a little leaflet setting out the preliminary details of a baby autogiro almost in the stages of production, and yet it is difficult to make ourselves believe that in the wink of an eye it should and will be a mass-production job.

What are the possibilities of this little magic carpet? Easy to learn to fly, easy to control, easy to take off, easy to travel by, easy to land; so small that it can be housed in an ordinary garage, and as cheap to run as a small car. Then the possibilities are fantastic. With a garden but little larger than a tennis court and just an ordinary garage—and there are thousands of houses with these amenities; flat roofs on the blocks of flats springing up in the hearts of towns like mushrooms—and we are free as the birds to fly.

From our home in London to the Sussex Downs in not more than half an hour—and the journey an exhilaration in itself—London to Manchester in about two hours, London to Edinburgh in five hours—and always the freedom of the air.

And we old fogeys of middle age will all be doing it before long because they are foolproof, and though we shall not agree that we are fools, still the word has a smack of comforting serenity.

And what of the Colonial with long distances to cover and bad roads to cover them on—gone are his difficulties. Heavens! The possibilities are so vast that they are almost unbelievable.

And who is going to be progressive enough to become the Henry Ford of the air? That small leaflet makes me for to think.

We laugh! They jeered at that first steam train out of Darlington!

JOHN CRAIGIE.

London, S.W.7.

THE INDUSTRY

FOR RAPID REFUELLING

A SPECIAL lorry designed for the speedy refuelling of commercial aircraft has been designed for Shell-Mex & B.P., Ltd. The vehicle has two compartments, holding 400 gallons and 300 gallons respectively. It can load itself at a speed of 30 gallons per minute, and deliver the fuel at a rate of up to 70 gallons per minute. A large capacity slow-speed reciprocating pump is driven by the lorry engine by way of a gear box. To attain a delivery speed of 70 gallons per minute four delivery hoses must be used at the same time. Sixty gallons per minute can be delivered through two hoses, and 45 gallons per minute through one hose.

The fuel passes through large filters incorporated in the pump and meter, and is delivered into the lorry tank through a Monel cloth filter permanently fitted to the tank manhole. Any water held back by the Monel cloth can be drawn off by readily accessible pet cocks. As an additional precaution there are water sumps in each tank. Besides a Kent flow-meter with a vertical dial reading up to 10 gallons, there is an independent recorder reading up to 999 gallons. This recorder, placed at zero when refuelling operations are commenced, records the actual quantity delivered.

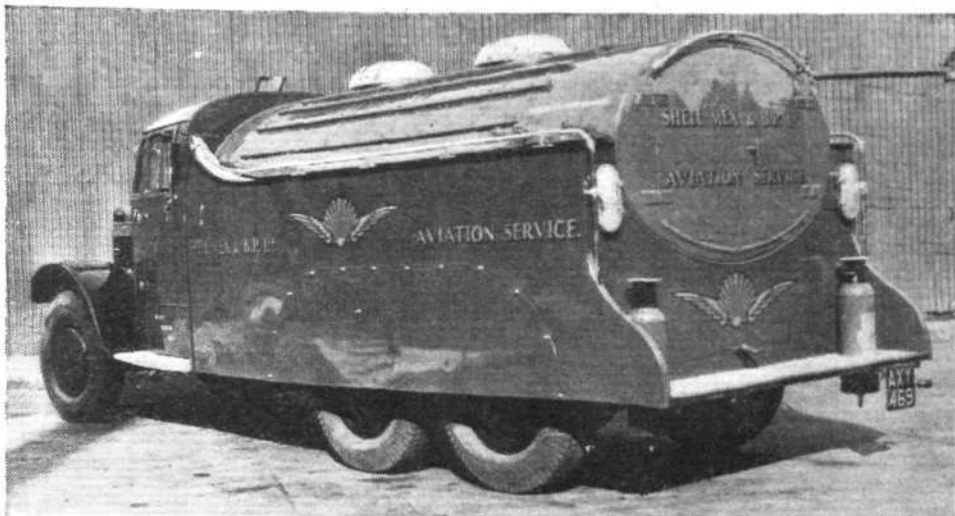
Safety devices include an all-metal cab and panelling, a fire screen, a Parish isolating switch in the cab, double-pole electric wiring, protected sparking plugs and leads, a flame-trap on the engine induction pipe, and an electrical bond between the delivery hose and the chassis, which eliminates any risk of fire caused by static discharges. A copper "earth" is attached to the steel structures to carry off static. The exhaust is in front of the fire screen, and has a two-way valve, so that when fuelling is in progress exhaust gases can be turned through a cylinder of water.

The lorry carries oil drums, ladders and fire appliances, and is fitted with a draw-bar for towing aircraft or an oiling outfit. A platform is arranged on top of the lorry so that connection can be made quickly to the tanks of high wing monoplanes without the use of a ladder.

One of these lorries will be in use at Mildenhall before the start of the England-Australia race, and similar vehicles, mounted on chassis suitable for various terrains, will be available at certain points along the course.

ACTIVITY AT HATFIELD

The second dual-control Express Air Liner for Qantas Empire Airways, Ltd., left Hatfield during the week, and Mr. H. Wood, pilot to Mr. R. C. Anson, flew the latter's new "Dragon-Six" away, smart in its grey and red colour scheme. Two Fox Moths, which are to be used as seaplanes in New-



FOR AIRCRAFT IN A HURRY: A special tanker for Shell-Mex and B.P., which can re-fuel aircraft at the rate of 70 gallons per minute.

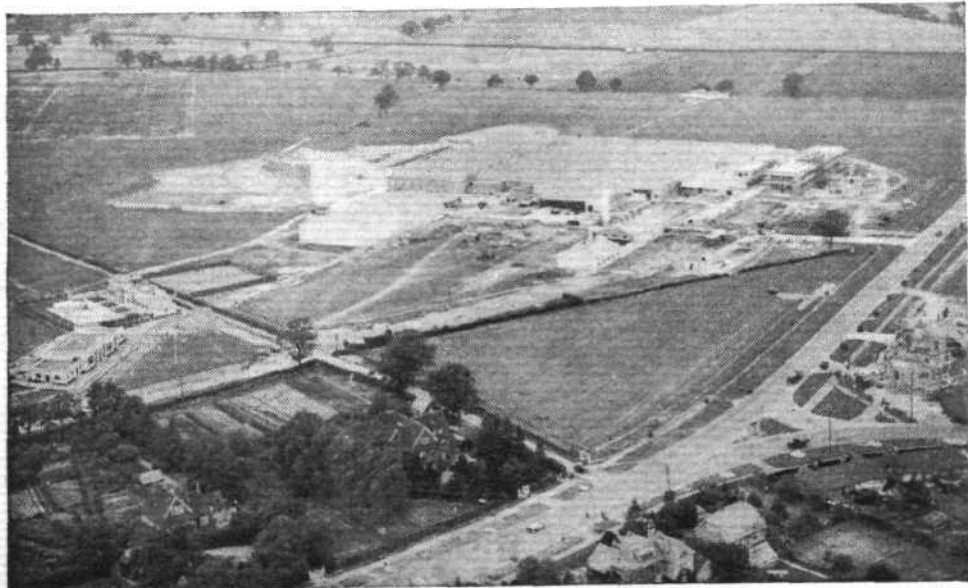
foundland, were shipped to Canada, and Lieut. Humberto da Cruz, of the Portuguese Air Force, took delivery of his "Leopard Moth," with which he intends to establish the first aerial connection between Portugal and Timor. Mr. Robert Fretz collected his "Puss Moth," which has been at Hatfield for the purpose of renewal of certificate of airworthiness, and he expressed satisfaction with the "Dragon-Sixes" which he is operating in Switzerland. Work on the three "Comets" for the England-Australia Race is progressing very satisfactorily, and the first one is frequently seen shooting about the sky on test work. Sir John Salmond inspected them during the week and also had a look at the new factory under construction.

PLESSEY WIRELESS ON AIRSPEED RACER

Capt. Neville Stock's Airspeed A.S.8 for the England-Australia race has been fitted with a Plessey long-wave transmitter and receiver type A.C.44, arranged to run from the lighting battery and engine-driven charging generator system with which the machine is fitted. This equipment provides C.W. or I.C.W. telegraphy and telephony on wavelengths between 500 and 1,000 metres, and is of the latest and most modern design. The transmitter is master-oscillator controlled, and the wavelengths accurately adjusted. The weight of the complete installation is 62½ lb., and it will provide telegraphic communication over a range of 500 miles, and telephonic communication over a range of 200 miles.

CELLON ACTIVITY

Cellon, Ltd., of Kingston-on-Thames, inform us that they have just consigned a large quantity of Dope to India for the India Office, and during the year the export business in Dope has increased very considerably. At the early part of the year a large order was despatched to Turkey for the Military Authorities, and since then contracts have been received from the Argentine, Bulgaria, Denmark, Egypt, Government of Sweden, Portugal and the Union of South Africa. It is interesting to note that the "Avro" Aircraft ordered by the Royal Egyptian Air Force, and which left England recently, were all doped with Cellon. The aircraft which were delivered to the Egyptian Air Force last year were also doped with Cellon Scheme "X."



HATFIELD: The new De Havilland works at Hatfield. The clubhouse and bathing pool may be seen on the extreme left. (Flight Photo)

AIR POST STAMPS

By DOUGLAS B. ARMSTRONG

(Editor of "Stamp Collecting," etc.)

Bleriot Stamp

IN rather belated commemoration of the first crossing of the English Channel by air five and twenty years ago, the long-promised "Bleriot" air mail stamp was finally put on sale by the French post office early last month. Of the face value 2 fr. 25 c., and printed in violet, the design, executed in line-engraving by M. Ouvre, shows a map of La Manche on which the positions of Calais and Dover are clearly defined, with the famous Bleriot biplane superimposed and inscription: "Louis Bleriot, 25 Juillet 1909" in the lower left-hand corner—a notable and appropriate addition to the growing list of stamps recording epoch-making flights.

International Aviation Meet

In connection with the recent International Aviation Challenge Cup meet at Warsaw, a limited edition of special air post stamps was created by the simple expedient of applying the words "Challenge 1934" in bold red type on the regular Polish air mail stamp of 20 groszy, together with the 30 gr. stamp of 1933 commemorating the triumph of the aviators Zwikow and Wigura in the previous circuit of Europe contest. Fifty thousand copies of each denomination only were so treated.

Iceland's New Air Stamps

For use in the regular air mail service which links the more remote Icelandic towns with Reykjavik, the capital, as well as between that island and the mainland, a very striking set of aero postage stamps has just been taken into use. Admirably printed and engraved by the London house of De La Rue, they embrace three different designs. The first, as seen on the values 10 and 20 aur, depicts an aeroplane passing over a mountain lake, whilst on the 25 and 50 aur it is seen emerging from a cloudbank over a snowfield. The vignette of the 1 and 2 kroner stamps forecasts the day when Iceland is destined to be one of the chief bases on the Europe-America air route, with its picture of an aeroplane approaching an outspread map of the island out of a sunlit horizon. First flight covers franked with these stamps bore in addition the impression of a three-line cachet reading: "By Air Mail Reykjavik-Edinburgh. Carried by Dr. Light."

Stratosphere Stamps

Some time ago it was reported that special stamps were being prepared by the Soviet Government in memory of the ill-fated Russian aeronauts who lost their lives in an attempt to break their own altitude record early this year, when their stratospheric balloon burst, destroying both them and their records. These have now materialised in a set of three values, each portraying one of the martyrs to science against a background of the falling balloon, as follows:—5 kopeks, lilac (Ussyskin); 10 kopeks, brown (Wassenko); and 20 kopeks, blue-violet (Fedesseenko).

America's Latest

A special 16 cents stamp denoting the combined fees for air mail postage and express delivery from the air port of arrival is now on sale at post offices in the United States, and should have a valuable effect in speeding up still further the transmission of correspondence by air. Steel blue in colour and rectangular in shape, it has for its device-in-chief the American Eagle in splendour, surrounded by rays of light, with the words "Special Delivery" extending across the top of the stamp, and "U.S. Postage—Air Mail," down either side.

Sabelli-Pond "Crash" Mail

Although the proposed special issue of Italian air mail stamps for the return flight of the Transatlantic flyers Sabelli and Pond failed to materialise, a limited mail was, in fact, consigned by them from Rome to New York, when the flight terminated so disastrously in the Welsh mountains on August 18 last. These letters were recovered from the wrecked aeroplane and handed in at the Newport (Pembrokeshire) post office on the following day, where they were duly postmarked. Only sixty of these covers are said to have been salvaged, all of which were autographed by Cesare Sabelli and franked with ordinary and air mail stamps of the Italian series commemorating the international football contests. Apart from their interest as mementoes of this ill-starred attempt, they have the significance of being the first "crash covers" to emanate from Great Britain.



THREE NEW ISSUES: On the left (top) is the French "Bleriot" Cross-channel commemoration stamp, and on the (right), is the stamp issued by Poland in connection with the recent International Aviation Challenge Cup meeting at Warsaw. (Below) is the special stamp issued by U.S.A. for combined air mail postage and express delivery from the air port.

A "Vacuum" Resignation

Mr. Wilfred E. Gooday, who, for over twelve years, has been manager of the Technical Department of the Vacuum Oil Company, has resigned his position with that company.

Mr. Gooday is a director of the Stream Line Filter Co., Ltd., and is now conducting his business from Brettenham House, Wellington Street, W.C.2.

P.B. Control in Airspeed A.S.8

It is probable that a P.B. automatic control will be installed in Capt. Neville Stack's Airspeed A.S.8 for the England-Australia race. A control of similar pattern has recently completed 70 hours' service in Mr. Philip Bailey's "Puss Moth" and has given complete satisfaction.

NEW COMPANIES

CORK AERO CLUB, LTD. Registered in Dublin as a company limited by guarantee without share capital. Objects: to establish, maintain and conduct a club for the furtherance of civil aviation and for the accommodation of its members and their friends. The directors are: James Crosbie, 95, Patrick Street, Cork, journalist. Charles M. Ryan, 36, McCurtain Street, Cork, house furnisher. W. J. O'Donovan, Shankill Lawn, Cork, pathologist. Michael Grimes, 2, Coolowen Villas, Magazine Road, Cork, bacteriologist. Richard F. O'Connor, Courthouse, Cork, county surveyor. Robert R. Patterson, 41, South Mall, Cork, American Vice-Consul. Ruth F. Hallinan, Glandanale, Fermoy, Co. Cork. David C. McLacklan, Club Garage, Cork, motor engineer. Kevin J. Cross, Sullivan Quay, Cork, commercial representative. Joseph Morrissey, 17a, South Mall, Cork, solicitor.

PUBLICATIONS RECEIVED

Air Publication 130. The Medical Examination for Fitness for Flying. (Royal Air Force and Civil). Air Ministry. September, 1934. Price 9d. net.
Air Publication 890. Handbook of Physical Training for Use in the Royal Air Force. Price 3/6 net.
Aeronautical Research Committee Report for the Year 1933-34. Price 1/6 net. London: H.M. Stationery Office, W.C.2.
Aeronautical Research Committee Report and Memoranda. No. 1522. Interference Between Bodies and Airscrews. Part II. By C. N. H. Lock and H. Bateman. August 1932. Price 1s. 6d. net. No. 1584. Effect of a Contraction on the Turbulence in a Fluid Stream. By A. Fage. November 1933. Price 6d. net. No. 1587. Wind Tunnel Tests on (1) Frise Aileron with Raised Nose, (2) Hartshorn Ailerons with Twisted Nose. By A. S. Hartshorn and F. B. Bradfield. February 1934. Price 9d. net. London: H.M. Stationery Office, W.C.2.
MacRobertson International Air Races, October, 1934. Pilots' Brochure. Issued by the MacRobertson Air Race Sub-Committee and the Royal Aero Club.
The Wild Barfield Heat-Treatment Journal. Vol. I. No. 2. September, 1934. London: Wild Barfield Electric Furnaces Ltd., North Road, N.7.
The Air Pilot. Great Britain and Ireland. Third edition. Price 12/6 net. London: H.M. Stationery Office, W.C.2.

AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations: Cyl. = cylinder; i.e. = internal combustion; m. = motors. (The numbers in brackets are those under which the Specification will be printed and abridged, etc.)

APPLIED FOR IN 1933

Published October 4th, 1934.

3850. ARMSTRONG SIDDELEY MOTORS LTD., GREEN, F. M. and REYNOLDS, R. Air-cooled engines for aircraft. (416,065).
 20588. BREEZE CORPORATIONS, Inc. Tie-rods for aircraft. (416,169).

APPLIED FOR IN 1934

1202. ROBERT, G. O. Compensated compass especially for aerial vehicles. (416,241).
 2748. HAMILTON STANDARD PROPELLER CO. Screw propellers and pitch-control mechanism therefor. (416,255).